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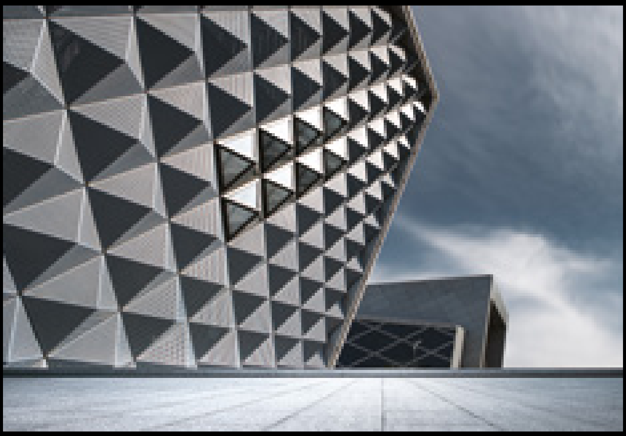

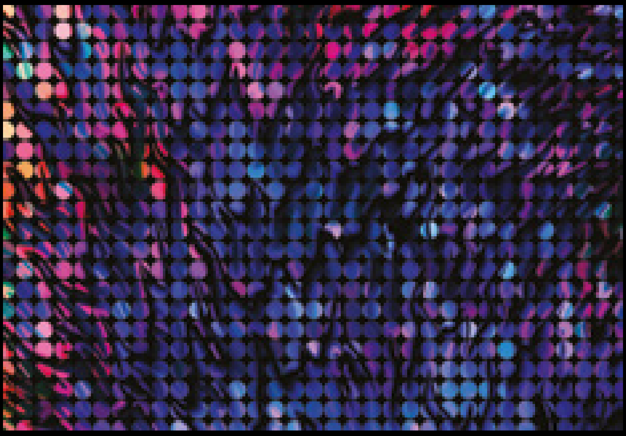

DATA LITERACY:
THE KEY TO UNLOCKING
A DATA-DRIVEN ORGANIZATION

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INTRODUCTION

In a digital world with exponential technological advancements, the ability to comprehend and communicate a common data language is a vital skill for organizations today. Data literacy has therefore become a key component for organizations and is the ability to read, analyze, utilize, and communicate data.

Despite this, on average, companies make only 48 percent of decisions based on quantitative information and analysis – a number that has not moved a great deal over the past couple of years due to a lack of skills at all levels, and as a result is impeding their transformation into becoming an insights-driven organization.[1]

A data-literate organization is critical to minimize new risks that arise from data not being correctly handled. There are many recent examples of large organizations being fined tens of millions by regulators due to a lack of data literacy. In this increasingly digital and regulated financial landscape, the demand for data literacy is not going to abate, it will continue to grow. It is time for organizations to make sure they have the tools to unlock its value.

In this paper, we will share how to understand your organization's current state of data literacy and what the journey to data literacy looks like, including cultural factors and risks.

> “*Data literacy has become a key component for organizations – and should not be considered as the remit of just one team, but the responsibility of an organization of data literate people.*”

THE MEANING AND IMPORTANCE OF DATA LITERACY

Data literacy is the ability to read, analyze, utilize, and communicate data. Data literacy can be broken down into two key dimensions, firstly as an organization and through its people. These dimensions complement one another and empower firms to ask the right questions, build knowledge, make effective decisions, and most importantly, cultivate a data capability among individuals.

PEOPLE & SKILLS

Comprehension
Read, write and understand data, understand how to access this in the organization

Collaboration
Work with others to solve problems and enable decision making while partnering with other teams

Impact
Deep understand of the impacts of data and potential it holds, across firm with accountability and ownership

Confidence
Build and have enough understanding in accuracy of data and the access people have to trust it as basis for action

Decisioning
Low risk decision making enabled by data and evidence

Innovation
Use data to execute processes, methods and prove hypothesis and brush boundaries of the possible enabled by experimentation and curiosity

Use & draw insight
Assess format in the way needed and enable insights to be easily drawn

Storytelling
Use data to tell a story and effectively communicate ideas and persuade decision making

Ethics
Know the right and wrongs of data, socioeconomic impacts and how to safeguard against the misuse of it

ORGANIZATIONAL

THE DATA LITERACY OF AN ORGANIZATION ALSO NEEDS TO BE CONSIDERED AT THE MACRO LEVEL IN ORDER TO USE DATA TO GET THE BEST OUTCOMES.

The organization needs to constantly address how best to utilize data to inform or enhance decisions, processes and the way it earns revenue and brings value to its customers.

To be successful, and continue to be, organizations must understand the key measures and indicators for success, establish success thresholds and constantly strive to meet them.

The business then needs to continuously assess and critique these measures and indicators to improve upon its measurements of outcomes.

THE MEANING AND IMPORTANCE OF DATA LITERACY CONTINUED

Being a data-literate organization is critical today to drive innovation, growth and profits. A data literate organization is also key to minimizing new risks that may arise from data not being correctly handled.

In the current digital world, customers expect real-time, easy to use, personalized services that require a more customer-centric, technology and data-led approach for servicing. A data-literate organization is fundamental in minimizing new risks that arise from data not being correctly handled, to contain costs that arise from the changing technology landscape and to grow new data-driven avenues for business. However, companies are struggling to becoming insights-driven organizations.

International Data Corporation, a global provider of market intelligence, forecasts a ten-fold increase in worldwide data by 2025.[2] It is expected that by the end of 2025, 59 zettabytes of data would have been produced in the world.[3] Organizations will naturally produce a vast amount data, for which data literate employees will be required to contribute more to their roles and help businesses to sharpen their competitive edge. Ninety-four percent of people using data in their current role agree data helps them do their jobs better and they also believe greater data literacy would give them more credibility (82 percent) in the workplace.[4] Data literacy is hence crucial as it not only has the ability to transform an organization, but also builds loyalty with a workforce, empowered by the investment in their professional development.

The ongoing COVID-19 pandemic has highlighted just how crucial it is for firms to make strategic decisions with confidence, whilst harnessing data effectively. Societal interactions are now heavily digitalized, which is increasing the rate of datafication. Data literacy is therefore an urgent matter as society conforms to new forms of interfaces. Nonetheless, the majority of FS products and services depend enormously on data, and because of this, some FS firms are already enhancing their data literacy.

BENEFITS OF INCREASING ORGANIZATIONAL DATA LITERACY

- Increasing data literacy allows firms to draw insights of customers whilst also offering services of greater relevance.

- Firms with greater data literacy levels see an increase in enterprise value of between 3 to 5 percent.[5] Ultimately, such insights mean that organizations have better judgment and can therefore make better decisions.

- Strong data literacy in the organization is important to leverage the value of maturing data platforms and modern data architectures.

- Operating models of the future and the people within them need to be able to harness the power of event-driven architectures and platforms that can process higher volumes of data at increasing velocity.

- As more technologies and platforms are in a position to process and leverage unstructured data, people need to be in place to harness the insights available from these modern platforms.

PITFALLS OF NOT INCREASING ORGANIZATIONAL DATA LITERACY

- As mentioned previously, big data means that organizations are dealing with incredible amounts of data. If low data literacy persists, this will hold many teams back, and stall digital transformation initiatives massively.

- Without data literacy, leaders will struggle to thrive in today's analytics economy, which will impact how much they can effectively drive any cultural data changes across their organizations.

- Similarly, for employees, those without data skills will struggle to match the performance of their data-savvy colleagues, which is likely to lead to a fragmented data and workplace culture and low data confidence among the workforce.

THE MEANING AND IMPORTANCE OF DATA LITERACY CONTINUED

- For this reason, firms must take action to avoid organizational silos across teams and maintain competitive advantage, particularly where competitors are conforming to a data-literate operating model.

- Furthermore, an employee's ability and desire to drive better business outcomes through using existing and emerging technologies is another vital skill for organizations to adopt. This is known as digital dexterity, of which data literacy is an underlying component.

KEY STATISTICS

The volume, velocity, variety, and veracity of data is only going to increase, yet:

- Only 32 percent of leaders believe they can create measurable value from data[6]

- Just 27 percent of leaders believe their analytics projects produce actionable insights.[7]

The financial repercussions of a lack of data literacy within financial services firms have been captured in the press all too recently. In 2020, data protection penalties climbed by as much as 40 percent, and firms operating in Europe were hit with €273m in fines for GDPR infringement.[9]

8X Insights-driven firms are growing at an average of more than 30% annually and are on track to grow eight times faster than global GDP.[9]

94% of people using data in their current role agree data helps them do their jobs better and they also believe greater data literacy would give them more credibility (82%) in the workplace. (Qlik Survey, 2018)

HOW TO UNDERSTAND YOUR ORGANIZATION'S CURRENT STATE OF DATA LITERACY

We have studied many high performing data-literate companies. We believe the best ones have tailored their learning and development for the diversity of their workforce. However, we believe no organization has yet reached 'data literacy utopia' in Stage 3: Data fluency – where any organization can disrupt learning platforms and enhance data literacy outwards, potentially impacting positive socioeconomic change.

We have outlined the journey to fluency in climbing the data literacy ladder but beware the pitfalls!

STAGE 1: PROFILE

Understand your organization's current state and answer the following questions:

- What is our baseline and what skills do we have?
- Are we championing data and success?
- Where are our power users?
- Are citizen data scientists realistic in our organization?
- What are our interactions?
- Do we have the right career paths in our organization to attract right talent?
- Where is our talent?
- How many of our decisions are based off data?

Then, you need to profile your organization as detailed on the right, understand the personas you need to tailor training for. You can then skills and training needed for each persona and role.

BEING DATA LITERATE DOES NOT MEAN EVERYONE LEARNING TO CODE. EVERYONE NEEDS TO BE DATA LITERATE, INCLUDING YOUR ORGANIZATION.

The first step is to profile your organization to understand the personas and roles you need to tailor training it is important to invest time upfront to understand learners and their diversity. It is important to understand the kind of data personas below as they tend be mapped organically to the different roles people are doing in a company.

Dataphobic
Someone with low confidence in their data skills and underestimates how much data they already use

Data genius
Data analysts, scientists: they are top of the line and need to hone communication, leadership and mentoring

Data pragmatist
Someone that doesn't use data or analysis in job but could be taught to improve performance using data

Data perfectionist
Someone that lets perfect get in the away of good the good progress – bring them on iterative data improvement journeys

Data communicator
Know how to present and question data, asking good questions and lead data projects

Data sceptic
Most likely a nonmember of the team – help them understand the importance of data and get them involved in data projects

HOW TO UNDERSTAND YOUR ORGANIZATION'S CURRENT STATE OF DATA LITERACY CONTINUED

When designing training programs, consider the following:

- Locations: are there regional and cultural considerations to consider per region?
- Multichannel: can we run bake-offs and other forms of competitions, and use gamification?
- Incentives & bursaries: is there encouragement of intellectual curiosity and continuous learning?
- Career frameworks: Are there varied and non-linear career frameworks that motivate people to continue enhancing their data literacy?

Remember: you do not have to do all this yourself, think about how you can partner and engage with others, such as:

- Vendor partnerships
- Institutions
- Internal business functions
- Campuses (some departments in your organizations already may be data literate, what can you learn and repeat?).

The above will enable you to climb the ladder to Stage 2.

THREE POSSIBLE APPROACHES	PROS	CONS
Exam-based Test everyone in the organization against defined data literacy skills and needs	Accurate view of where organization is now and informs how to proceed with training	Could cause damaging impact to people, culture and morale of organization by creating anxiety over job securities
Survey-based Get everyone to participate in a questionnaire that they answer along a sliding scale for defined data literacy skills and competencies	Capturing perspectives of individuals and enables quick and easy data aggregation to baseline organization	Can be subjective and results are open to manipulation
Baseline at zero Measure above from the current state	Enables you to easily baseline and produce a plan from the start	Less tailored to your organization's past and current state to devise a plan

HOW TO UNDERSTAND YOUR ORGANIZATION'S CURRENT STATE OF DATA LITERACY CONTINUED

STAGE 2: ACCELERATE & REINFORCE DATA LITERACY THROUGHOUT YOUR ORGANIZATION

Now that you have strong data literacy initiatives embedded into your departments, and these are running effectively, you should then think about:

- Monitoring and gathering data points: continuously track current data literacy and improvements with well-established KPIs
- Solidifying partnerships with institutions to bring best-in-class thinking
- Continuously evaluating new technology and techniques to train people
- Developing omni-channel training programs: gamify, peer to peer and competitions to cater for different learning, cultural and neuro diversities.

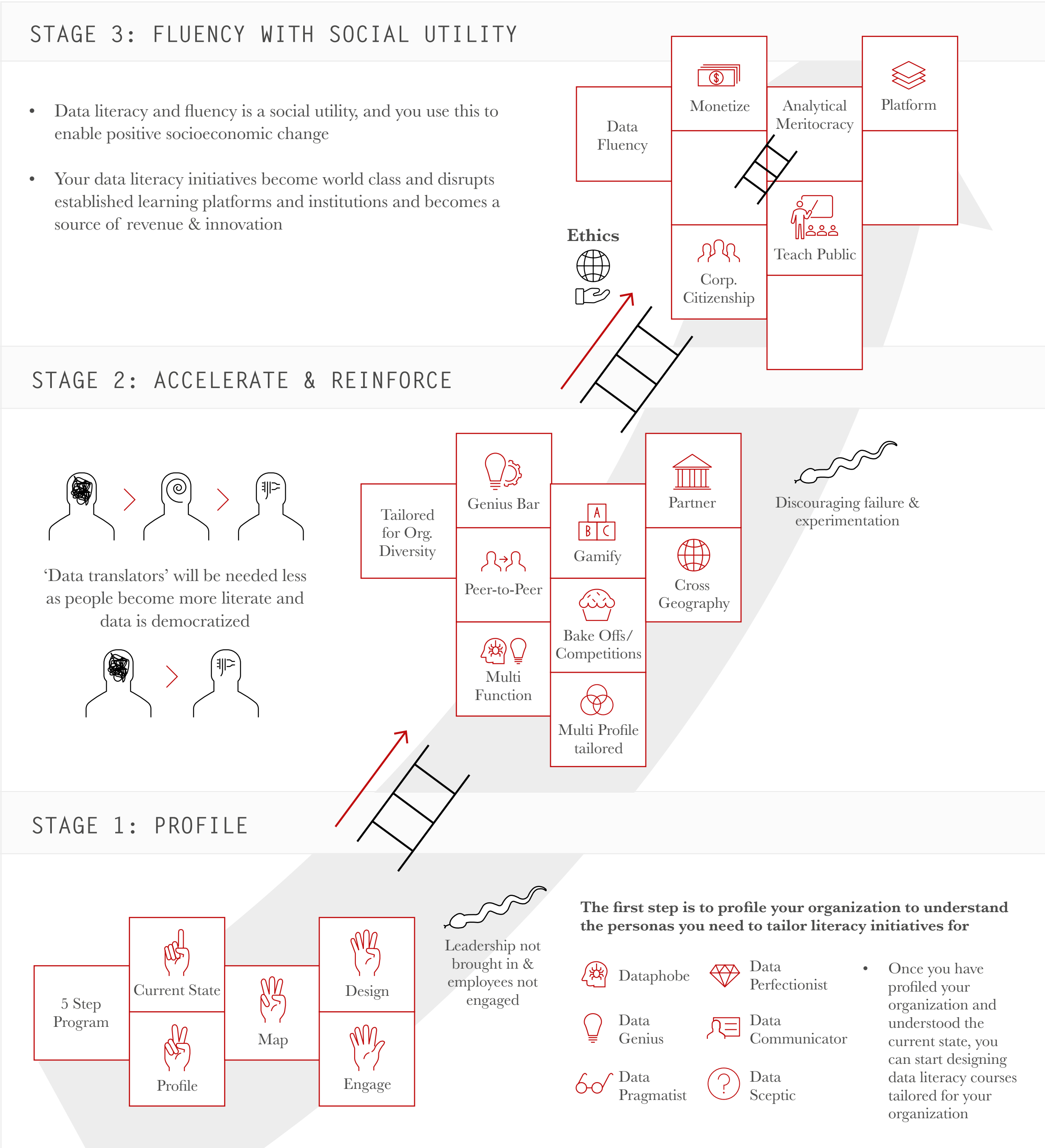
STAGE 3: DATA FLUENCY

Your data literacy initiatives have become world-class and disrupt established learning platforms and institutions. Here are some things to consider as you become data fluent as an organization:

- 'Data translators' will not be needed, as people become more literate and organizational data is now democratized
- You can monetize your training capabilities as a service and platform
- Engage via social learning platforms which include competitions and sandbox environments where people compete socially to build the best new trading algorithms and machine learning models to help generate new revenue opportunities to improve your business
- Data literacy and fluency is a social utility, and you use this to enable positive socioeconomic change by:
  - Teaching your customers and the public how their data is being used and help them navigate ethical dilemmas and make the best-informed decisions
  - Providing training as a corporate citizenship initiative to schools and charities, giving your employees chance to increase their data communication and reinforce their own training by practice.

HOW TO UNDERSTAND YOUR ORGANIZATION'S CURRENT STATE OF DATA LITERACY CONTINUED

Think of your organization's data literacy journey through the stages like a Snakes and Ladders board. You need to be aware of the snakes that can hold you back on the journey, which are discussed as risk factors in the next section.



KEY CULTURAL FACTORS AND RISKS SURROUNDING DATA LITERACY

We strongly believe that training is only part of the equation, to make data literacy every lasting and ensuring a data-driven business, culture is the glue to bring it together. There are also risk factors in data literacy projects but these can be mitigated against with prior planning!

CULTURAL FACTORS

Augmenting data literacy initiatives with structured post-training support will help your organization realize the benefits from it for longer, and promote a culture of life-long learning, especially in regard to data and digitalization, which is an ever-evolving and ever-more complex landscape. We recommend introducing learning as part of the daily flow of work. Multiple studies show the importance of a learning culture in the workplace. In fact, employees rank it as the second highest importance in their workplace happiness[11]; almost half of millennial-age employees would leave a role due to lack of learning and development opportunities[12]; and companies with a culture of learning reportedly have a higher engagement rate of 30-50 percent than those without.[13]

Also, changing company cultures will take time. It is important to think about 'evolution rather than revolution', and to understand and respect the current company cultures, then consider how to define a set of desired values and behaviors around that. Share early success stories of people's milestones in their data literacy journey and champion them; having visible proponents such as this will continue to motivate and inspire employees. Culture and accountability can also be linked to enable the growth of data literacy, having learning milestones linked to performance objectives and performance frameworks can be a significant accelerator.

KEY CULTURAL FACTORS AND RISKS SURROUNDING DATA LITERACY CONTINUED

Continuous coaching

Learning
Classroom, virtual and online training provides the foundation of learnings

Doing
Each training provides a practical learning experience which can be directly applied to the role in the business context

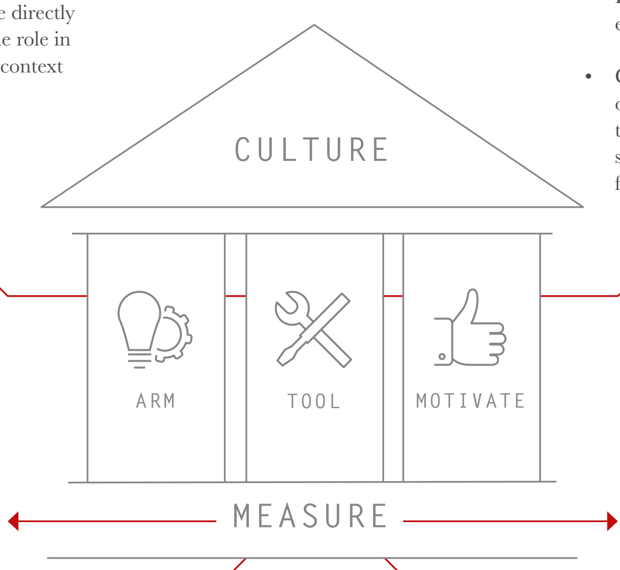
Coaching
Provide formal and informal coaching for ongoing support to learners who face practical challenges in performing their role

Learning reinforcement

- We advise a 'hands-on' coaching approach up front, which develops into a lighter touch intervention as experience and confidence develops within the individual / team

Innovative culture

- Establish a workforce culture that encourages innovation
- Capco recommends the use of proof of concepts to give extra opportunity to talent, giving them to practice new skills and stretch themselves in a risk-free environment



Genius bars

- A post-training support squad will stand up and run regular data clinics, which offer learners a forum to raise practical questions, understand best practice and an opportunity for peer-to-peer learning
- The clinics can be run either in-person within a location or virtually

Train the trainer

- Train the trainer sessions will follow the shadow and reverse shadow approach
- Develop a structured knowledge transfer plan to support the upskilling of each trainer

Partner to measure

- Use of vendors and digital education providers in the data and analytics space can be used as a way of continually assessing the progress of employee data literacy levels
- Platforms such as SuccessFactors, Cornerstone & DataCamp can be used to set up custom role-based training plans and track progress
- Data literacy index: Set a base rate and then measure improvements on four key areas: awareness, tooling, skills and decision making

Championing & sharing success

- Talent should be championed when they reach training and development milestones
- Creating a community spirit and encouraging collaboration are key to long-lasting results

KEY CULTURAL FACTORS AND RISKS SURROUNDING DATA LITERACY CONTINUED

RISK FACTORS

Whilst it is important to talk about the benefits of data literacy, there are risks if data literacy initiatives aren't implemented effectively and continually monitored. Identifying and recognizing potential risks to the data literacy initiatives you may deploy is essential. Based on our experience and observations within organizations we identified the most common risks, their impact and how organizations can mitigate them proactively. Identifying and recognizing potential risks to the data literacy initiatives will ensure mitigating actions can be taken early for success.

RISKS	IMPACT	MITIGATIONS
Lack of engagement from leaders, other staff and teams across business units and technology domains	Inconsistent and/or reluctant adoption of data literature across the firm	• **Create an internal marketing campaign** to generate excitement and interest across the firm • **Develop engaging materials and present data trainer SMEs** who clearly articulate the 'why' and the 'how' • **Pilot any training sessions** before formal roll-out to ensure key messages are landing • Creating **post-training support**, in the form of coaching and 'genius bars' to support learners as they progress on their individual learning and development journey
Generic course materials written in a way that doesn't resonate with learners	Leaners are not able to practically apply their learning to their role	• **Create highly engaging course materials** that are specifically tailored to the needs of learners, catering for different ways people learn • **Augment theory with practical examples** that resonate with learners • Make sure any role-based training will include specific **roles and responsibilities expectations** • Curate sandbox-style environments for people to apply training and experiment the skills gained
The learner population get **training fatigue** over time	Engagement levels, particularly for learners that are in-scope for multiple courses within the curriculum, decrease over time	• Formulate a global delivery schedule to ensure **intelligent sequencing** of role-based courses, particularly for learners who are attending multiple courses • The delivery schedule **needs to account for other in-flight and neighboring training programs** • Leverage of a variety of training delivery techniques (e.g. experiential learning), **bringing content to life** and make the **learning experience memorable** (structured role-plays and group exercises etc.)
Over time, **training materials become out-of-date** and no longer aligned to changing business strategies	Training content becomes outdated and the overall program and course level objectives are not met	• The course materials and delivery approach must be **frequently reviewed and iterated** based on learner feedback • Data SMEs and Program stakeholders should provide regular **feedback** and suggest iterations based on changing strategies, objectives etc.

CONSIDERATIONS BASED ON OUR DEEP EXPERTISE WITH DATA TRAINING, INCLUDING LESSONS FROM PREVIOUS ENGAGEMENT AND INDUSTRY INTELLIGENCE

Understand your audience and their diversity

Learners have different levels of experience and understanding of key topics.

Research of the target learning audience, allows us to tailor the training courses to fit roles, culture and varied levels of subject competence. This should include surveys of participants before and after training to monitor progress and areas of interest.

Keep people engaged

Training is not effective if people are not engaged in the virtual or physical classroom.

Write story boards with the audience and use these to discuss issues, impact points, risks and opportunities. This approach brings together people new to the topic as well as experienced subject matter experts.

Not a "box-ticking" exercise

It's tempting to assume that the learning and development journey is complete once the learner leaves the classroom.

A range of post-training ongoing support measures, such as 'clinics' and working groups keeps the newfound knowledge fresh and increases the likelihood of a real change in behaviors and decision making.

Experiential learning

Learning is accelerated using simulation and practical exercises.

Use a variety of training delivery techniques to bring the content to life and make the learning experience memorable. This includes structured role-plays and group exercises.

Gamification

Application of game-design and game principles to improve engagement.

The introduction of game related practical exercises and analogies into course design and delivery will truly help makes the experience memorable for learners.

Community

Training is an opportunity for personnel to connect with the broader organization.

Create opportunities for learners to form networks with colleagues who know data. Data immersion events bring people together to share ideas and understanding, thereby strengthening the data community.

CONCLUSION

The ability to comprehend and communicate a common data language is a core necessary skill for organizations. Data literacy has become a key component for organizations – and should not be considered as the remit of just one team, but the responsibility of an organization of data literate people.

A data-literate organization is critical to minimize new risks that arise from data not being correctly handled, to contain costs that arise from the changing technology landscape and to grow new data driven avenues for business.

We believe the best organizations have tailored their learning and development for the diversity of their workforce. Achieving long-lasting data literacy in your organization is not just about having best-in-class learning and development initiatives. It is imperative to identify risks early and mitigate, and, most importantly use culture as a mechanism to make it stick.

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THE DIGITAL WORKFORCE AND WHY IT MATTERS NOW

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INTRODUCTION

As the COVID-19 pandemic creates shockwaves through the global economy, most organizations are facing a reduction in business volume and profitability. Businesses in the travel and entertainment sectors have been severely affected.[1] While financial institutions are sheltered from some aspects of this economic downturn, the sector is by no means immune. In fact, the pandemic's effect on financial institutions has only just begun and may take years to fully materialize.[2]

Spending cuts will help many companies weather the storm, but prudent organizations will take advantage of this inflection point by redefining what they do and how they do it. Forward-looking financial institutions will revisit how digital initiatives can help them navigate today's obstacles and better position them to take on the challenges and opportunities of the future.

While the discussion around digitization does not always take place in the context of human resources (HR), human capital is a major factor in the success of automation programs. If digitization is to reach its full potential, an organization's workforce must be ready, willing, and able to embrace a digital workforce.

> *"An effectively implemented digital workforce will improve business resilience, remediate costs associated with the COVID-19 pandemic, and improve employee experiences by embedding flexibility and growth opportunities into roles."*

WHY BUILD A DIGITAL WORKFORCE NOW?

Capco defines a digital workforce as virtual "workers" that assist human beings in the form of artificial intelligence (AI), including robotic process automation (RPA), optical character recognition (OCR), machine learning (ML), process mining, no/low-code application and workflow solutions, and many other advanced or advancing technologies. The combination of these technologies is referred to as intelligent automation, which can be used to create digital workers capable of handling processes end-to-end by combining RPA, OCR, ML, and human-in-the-loop workflow to handle exceptions and in some cases make final decisions.

Intelligent automation can have a significant business impact and has huge cost-lowering potential; unlike humans, robots can operate around the clock, and they typically cost up to 80 percent less than a full-time employee.[3] Some common use cases for a digital workforce with high automation potential within financial services include loan underwriting, insurance claim processing, and anti-money laundering (AML) and know your customer (KYC) compliance. With the right technology, these use cases can be dynamic; automated processes that leverage ML are able to continually improve by using exception data to retrain models.

While the pandemic has added renewed urgency to conversations about the digital workforce, the underlying drivers have existed for years and will likely become more prevalent in the future. Two of the clearest lessons learned from the fallout of the pandemic thus far are:

1. Business continuity is essential, and many legacy systems and processes are not capable of maintaining continuity in unstable societal and economic conditions, and

2. Businesses must be prepared to respond to rapidly changing regulatory environments.

As has become evident during the COVID-19 pandemic, humans are impacted by societal disruption in ways that automated systems are not. While human productivity might be affected by restricted access to business locations, robots can continue to carry out their duties with minimal disruption. A digital workforce creates a more resilient organization whose operations are less dependent on human actors and can function in unanticipated circumstances; this includes potential improvement to business continuity (BC) and disaster recovery (DR) capabilities.

Business resilience is what makes it possible to overcome disruptions and adapt quickly to changing circumstances while simultaneously maintaining normal business functions. It presumes an ability to protect people, assets, intellectual property, and business reputation amid unstable conditions. Ultimately, a resilient organization is also more efficient and focuses on exception handling, continuous improvement, and customer satisfaction. Business resilience may depend on sets of responses and technologies such as BC/DR plans and tools, but it looks beyond those tactical approaches to the big picture. A digital workforce can better shape BC/DR plans and make them more effective through conscious participation.

The COVID-19 pandemic has also introduced new regulatory challenges in the financial sector. This is an acceleration of a preexisting trend. Before the pandemic, industry experts estimated that the proportion of revenue spent on regulatory costs would more than double from 4 percent to 10 percent by 2021.[4] Now that COVID-19 has prompted, and will likely continue to prompt, an influx of government programs, financial institutions must be able to stand up cost-effective responses very quickly. For example, the pandemic sparked the Paycheck Protection Program (PPP), which created unexpected application processing and other costs for participating banks. A digital workforce can help remediate regulatory costs for financial institutions in this rapidly evolving regulatory environment. Automation technology providers offer solutions for a wide range of use cases, including AML, KYC, and mortgage remediation, among others.

WHAT DOES A DIGITAL WORKFORCE MEAN FOR EMPLOYEES?

The result of more automation and human-automation pairing will be a new kind of hybrid enterprise that will likely be far more productive. However, there are bound to be challenges. How well will humans adapt? What steps must management take to gain productivity by helping HR adapt while also maintaining or improving employees' work environments?

Because a digital workforce is oriented toward continual change and improvement, those who embrace agility and diverse skillsets will be particularly successful in using one. That said, many digital workforce technologies are highly user-friendly and do not require users to complete retraining or possess advanced technical skills. The key to a successful digital workforce is human assets who are excited, engaged, and willing to make the most of the technology at hand.

The digital workforce operating model focuses on delivering operational resilience and maintaining business operations during sudden changes in an organization's environment, from public health crises to natural disasters or any other unforeseen circumstance. COVID-19 presents financial institutions with an opportunity to build the business of the future: Instead of being reactive, a firm can proactively improve operational processes and provide better technology and support to ensure its client-facing and other business functions can navigate unexpected challenges.

A key component of this proactive approach is investing in integrating human and technical capabilities early on, creating a combination of resources that can best deliver results for the enterprise and its customers. Integration is facilitated by remote work management capabilities and collaborative tools which have become paramount during the COVID-19 pandemic and will continue to drive value once it has ended. The pandemic has largely disproven notions about what can and cannot be done with a dispersed or work-from-home workforce, permanently impacting the future of work and employee experience. Organizations that embrace these changes to increase both employee satisfaction and productivity will see a substantial competitive advantage.

HOW TO ACHIEVE A DIGITAL WORKFORCE

Developing a digital workforce is a multi-stage process that can look different depending on an organization's budget, scale, and business objectives. Senior leadership should align on the vision and business case for a digital workforce early on to ensure program success. Once stakeholders are aligned on scope and business objectives, there are several steps an organization can take to prepare its automation initiatives to thrive:

PLAN AND BUDGET

The success of any business transformation depends on securing sufficient support, including financial support. Digital workforce planning should therefore begin with an evidence-based roadmap and budget that will attract support and commitment. The roadmap should consider funding for people (hiring, training, and promoting), processes, and technology, including an assessment and rationalization of existing tools.

Follow-on investments in intelligent automation and associated workforce training can further showcase the transformation and bottom-line results made possible by technology and a digital workforce. This is important because budgeting for newer processes and technology will invariably require a demonstration of business value.

UNDERSTAND INTELLIGENT AUTOMATION

When developing a digital workforce, it can be helpful to consider technological investments in terms of their location along the automation spectrum. This spectrum spans from foundational automation to artificial intelligence, but there are two major categories of automation technology that organizations should understand before deciding which systems are the best fit for them. These are:

1. Traditional robotic process automation (RPA) tools, and

2. Intelligent automation.

Whereas RPA is purely tactical and used to improve efficiency within existing systems, judgment-based intelligent automation technologies are transformational and can evolve with an organization.

HOW TO ACHIEVE A DIGITAL WORKFORCE CONTINUED

Automation has been around in many forms for decades, with organizations traditionally relying on macros, scripting, and full-stack Java development, but the introduction and adoption of RPA over the last several years has been a game-changer, providing organizations with a platform to take the concept of scripting to the next level by allowing it to work with any system without software integration. RPA does this by layering on top of a system's graphical user interface (GUI) to mimic human actions (clicking, typing) to move data between systems. However, while RPA is a powerful tool, it is most suitable for repetitive, rules-based tasks. Given the number of processes that rely on processing unstructured or semi-structured data (documents, emails, free-form text, etc.), more is needed to automate processes end-to-end.

Intelligent automation was developed to fill some of the gaps in RPA's capabilities, particularly with regard to unstructured data. Intelligent automation and artificial intelligence are increasingly judgment-based; they use machine learning techniques, including natural language processing (NLP) and predictive analysis, to perform complex tasks and improve as they go. ML models in business operations are typically "supervised," meaning that they are trained using previous output from human workers. A relatively small dataset, such as 100-500 examples, is generally enough to generate a model that can confidently make predictions in most cases, while also identifying the exception cases it cannot confidently predict. These exception cases are then routed to humans for processing.

Employees are crucial to the success of intelligent automation. Identifying the right people to train models is paramount, as bots will replicate human responses. Moreover, human workers not only address exceptions but also provide the data that is used to retrain models. As larger and larger sets of data pass through a model and are used to retrain it, the model can begin to address some of the less common, or "edge," cases it could not initially process.

RECOGNIZE THE NEED FOR ORCHESTRATION

No matter what technology an organization uses or where on the spectrum it falls, optimizing the value of automation requires orchestration. In simple terms, orchestration functions as automation for automation; it liberates humans from having to think about and handle the logistics of multiple processes and forms of automation operating simultaneously. Orchestration tools come in many forms, but each aims to create effortless coordination between human and digital elements. They can be used to create custom tasks for situations in which human input is required in an automated process, as well as route work between humans and between bots and humans. Orchestration tools also allow users to design custom front ends and workflows and integrate with pre-built connectors to data sources. For example, these tools can help build connections between email and SaaS offerings such as Salesforce and help deliver information between digital silos.

PREPARE FOR MANAGEMENT AND HR CHALLENGES

It is commonplace for organizations to hyper-focus on the "digital" aspect of "digital workforce" and give insufficient thought to the "workforce" element. This leads to disappointing results. Human resources and management organizations are essential to digital workforce development. They must work with employees to identify which tasks require human intervention and how that human oversight aligns with the rest of an employee's role and responsibilities. More broadly, HR and management must help employees adjust to the ongoing organizational change that results from implementing automation programs. HR and management must consciously prioritize people. There are several steps that will help organizations achieve this:

1. **Revive workforce planning**. HR and management often have general plans for workforce acquisition, development, and retention. The uncertainty of modern business, including mergers and acquisitions, downsizing, and people's tendencies to change jobs more frequently than they used to, means that companies have tended to deemphasize this planning on the grounds that it is futile.

   Digital workforce development is an opportunity to revive and modernize workforce planning. HR should consider what skills are available and needed to drive business success, both in the aggregate and in terms of individuals and their

HOW TO ACHIEVE A DIGITAL WORKFORCE CONTINUED

evolving job roles and training needs. Upskilling, supporting cross training, and encouraging workforce flexibility should all be central to the digital workforce discussion.

2. **Equip for agility**. Similarly, HR should be ready and able to support agility among resources. Increased agility is a must-have in the modern workplace, and automation enables that: Automated bots can be trained and retrained quickly – and even automatically with machine learning – and they are always available and do not need physical access to buildings. This allows HR and management to focus energy and resources on shifting employee needs and emerging trends in talent acquisition and management. HR should consider questions such as, how can individuals be evaluated on and rewarded for teamwork and innovation in an emerging digital environment? Is the business equipped to upskill and quickly prepare employees to take advantage of new technology?

3. **Upskill management**. Managers and management may also need HR's help in understanding and adapting to digital transformation. HR should support senior resources in understanding their roles and responsibilities regarding the digital workforce, as well as the evolving roles and responsibilities of their employees more broadly. HR should consider whether management feels they have a stake in these new digital approaches, as managers' support will be critical to the success of automation initiatives.

4. **Build a digital corporate culture**. Finally, a successful HR team will imbue the broader organization with a digital culture that supports widespread enthusiasm for the opportunities a digital workforce creates. One of the biggest threats to successful digital workforce development is the way in which old habits, attitudes, and policies can subtly undermine opportunities for innovation. Some level of bias towards the status quo will naturally exist, which makes HR's active participation especially important in helping to make the digital workforce a successful reality.

CONCLUSION

It may be years before we understand the extent of the COVID-19 pandemic's impact on the financial sector, and how financial institutions respond now will influence future performance. Forward-thinking digitization will enable better business continuity and improve regulatory response capabilities as pandemic-related challenges continue to unfold. An effectively implemented digital workforce will improve business resilience, remediate costs associated with the COVID-19 pandemic, and improve employee experiences by embedding flexibility and growth opportunities into roles.

Organizations can maximize their digital workforce return on investment by allocating time and resources to plan and budget, understanding intelligent automation and the need for effective orchestration, and preparing for management and HR challenges that may arise as a result of digital workforce implementation. Equipping employees and management for business changes, shifts in roles and responsibilities, and emerging opportunities for upskilling and role growth will help secure buy in and build a digital culture within an organization.

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INSIGHTS FOR INVESTMENTS TO MODERNIZE DIGITAL BANKING

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INTRODUCTION

Competition for wallet share, through continued brand and product differentiation, has been a focus of strategic planning initiatives and business growth in banks of all sizes for decades. In years past, banks have driven revenue growth through targeted offers and in-mail marketing campaigns. Recently, however, brand and product differentiation has become far more focused on providing customers with enhanced digital experience, embedded with innovative features and targeted product offerings specific to customers' wants and needs. Over time, customers across all demographics have grown more digitally empowered, with increasing expectations set by retailers that place digital personalization at the heart of their everyday experience.

With the advent of popular digital services, such as Netflix, which increasingly personalize content to the individual tastes of each unique user, banking customers now expect this same level of customer experience from their financial services provider. Digital-first institutions, FinTech providers, and even common retailers, like Apple, are beginning to bring this level of digital innovation to financial services; shifting the balance of power away from legacy sales and servicing models to customer-centric, digital models. In a digital era, where personalization is paramount, banks will require a deep understanding of customer expectations to strategically innovate on current service offerings and keep pace with growing expectations from an increasingly digital customer base.

Capco study finds banks faced with a unique opportunity to monetize digital capabilities while simultaneously delivering personalized banking experiences to customers.

INTRODUCTION CONTINUED

To understand customers' expectations for financial institutions (FIs) in this environment of digital personalization, we went directly to the source. Capco surveyed 1,008 banking consumers of large institutional, super-regional, regional, community, and digital-first/fintech institutions to explore:

- What do people desire in a relationship with their financial institution?
- What products, services, and digital features are most important?
- What select products, services, and digital features will people pay for?
- What keeps them loyal to their FIs when switching is effortless?

The survey results ultimately drive insights into investment opportunities for FIs by detailing what digital features and level of customization customers expect and do not mind paying extra for; myth-busting the concept that innovation must be woven into the product cost itself.

The results are broadly categorized into four segments to help FIs develop sharper digital strategies by better defining and contextualizing their customers' motivations and expectations. This paper presents a detailed view of each category and offers a clear point of view on market trends, detailed analysis of the consumer survey results, and recommendations for banking leaders to capitalize. We will specifically focus on:

1. Personalization
2. Customer engagement
3. Desired digital features
4. Trends in bank-switching

KEY FINDINGS

- Regardless of age, over 70% of customers rate personalization as "highly important" to their banking experience (millennials – 79%, Gen Z – 75%, Gen X – 74%).
- Over 70% of customers display an interest in rewards features, with more than one-quarter of customers willing to pay for top features.
- Younger generations are more likely to switch banks due to rewards perks.
- Fraud, interest rates, and rewards are the top three reasons prompting customers to consider switching banks.
- A majority of respondents (63%) across all age, bank and income segments indicate a desire for one-on-one personal interaction with bank representatives, either on the phone or in-person.

PERSONALIZATION: BANKING ON CRM TO ATTRACT AND RETAIN CUSTOMERS CONTINUED

The desire for customers to personalize their banking experience – to enjoy the benefits of a consistent, customized experience through access to daily information and advice – is the most prominent feedback from customers.

Think of personalization as providing the customer with real-time access to preferred products, services, and capabilities based on changing goals and evolving priorities. When done right, and with strong privacy controls, this level of personalization builds engagement, loyalty, and brand differentiation.

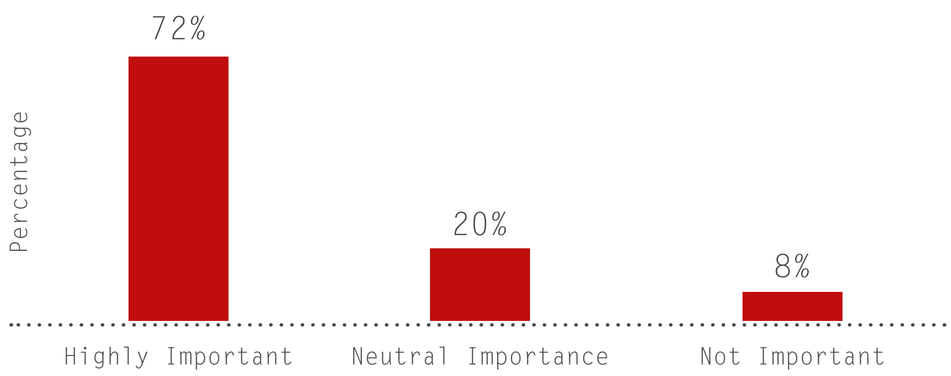
The key to capitalizing on personalization trends is optimizing organizational data to deliver a tailored experience for each individual customer. Banks have always held vast amounts of data sourced from numerous channels, which would provide them with a clear and unified view of their customers. However, accessing and interpreting data intuitively is something many organizations have historically struggled to deliver. According to a Veritas Global Data Report, organizational collections of data currently consist of 52% dark data (where its value is unknown), 33% redundant, obsolete and trivial (ROT) data (where it is known to be useless), and only 15% identifiable business critical data.[1]

When properly organized and managed, banks can convert dark data into business-critical data, helping drive unique customer experience at the individual level. Customer relationship management (CRM) systems help compile and harness this data from various interaction channels to learn more about a customer's activity and preferences for clues to best service their needs. Investment in a CRM system helps banks stay connected to customers, streamline processes, and improve profitability through a reinvigorated focus on individual customer preferences. Improving personalization through CRM systems can also greatly benefit an organization's top and bottom line, as 72% of survey respondents feel personalization is "highly important," while only 8% said it was not. This results in a direct opportunity to influence the bottom line.

The importance of personalization is on the rise among emerging customers, as the millennial generation placed the highest value on personalization. Additionally, over 70% of respondents across all income levels rated personalization as highly important.

Across all demographic groups, respondents displayed a willingness to trade personal data for enhanced personal experiences. To obtain this enhanced, personalized experience,

HOW IMPORTANT IS PERSONALIZATION TO YOU?



PERSONALIZATION: BANKING ON CRM TO ATTRACT AND RETAIN CUSTOMERS CONTINUED

surveyed customers are prepared to share feedback. Of those surveyed who felt personalization is important, 86% professed willingness to provide feedback to their banks at least annually. Regular feedback from customers, through digitally prompting users to weigh in on what works for them, will provide banks with valuable guidance that accelerates innovation. In today's age, with personalization at the core of the digital banking experience, executives must keep in mind that rapidly acting on consumer feedback is a requirement.

Guided investment in personalization pays off for banks by providing customers with an improved experience and positively impacts the top and bottom line. Commonwealth Bank of Australia[2] won two recent Celent awards for customer engagement by using AI to create hundreds of predictive models of customer needs. The models created "next best conversation" opportunities with customers, whether that engagement is a happy birthday email or a mortgage review offer. Commonwealth Bank of Australia was rewarded for its innovation, according to Celent, with a "tenfold increase in lead volume, 95% of which was actionable. Lead conversion rates also tripled."

Domestically, Bank of America is also reaping the rewards from their personalization efforts with "Erica," its virtual financial assistant in the bank's mobile app. Pre-pandemic, the bank's total active digital banking users grew 6% year-over-year to 39.1 million, while its mobile active users grew 10% year-over-year to 29.8 million in Q1 2020. The institution's digital sales accounted for 33% of all consumer banking sales in Q1 2020, up from 29% in Q4 2019 and 26% in Q3 2019.[3] When considering investment opportunities in digital capabilities, investment in digital personalization initiatives has proven to pay off.

CUSTOMER ENGAGEMENT: THE HUMAN TOUCH IS FELT

In order to maximize customer satisfaction through personalization, banks must engage with their customers regularly to obtain real-time feedback and adjust their tactics accordingly. Customer engagement is all about forming a connection, building trust and loyalty, and engaging with customers in a personal but relevant way to keep them tuned in.

When asked how customers preferred to engage with their bank, the majority of survey respondents (63%) indicated a desire for a one-on-one personal conversation with bank representatives, either on the phone or in-person. The remaining 37% favored text-based interaction, via chatbot or text message communication (chatbots can communicate with customers using voice, text, or tap, depending on how banks set them up).

Results show customer willingness to engage with a chatbot declines with age, with 18% of generation Z favoring chatbots, compared to only 8% of the baby boomer generation. Unsurprisingly, preference to speak with a branch representative increased as age increased, with only 23% of generation Z preferring face-to-face engagement, compared to 36% in the baby boomer generation.

In general, the type of bank that customers interact with had minimal impact on engagement preferences, with many customers preferring live interaction over digital (i.e., chat-bot) communication. Community (34%) and regional (41%) bank customers preferred to speak with a branch representative, while super regional (38%) and large institutional (36%) patrons preferred to speak with a customer representative by phone. Digital-first/fintech customers, however, did signal partiality for technology-based interaction over human contact, as 41%

CUSTOMER ENGAGEMENT: THE HUMAN TOUCH IS FELT

CONTINUED

of customers preferred to engage with a chatbot, potentially indicating a predisposition toward digital communication methods in this customer segment.

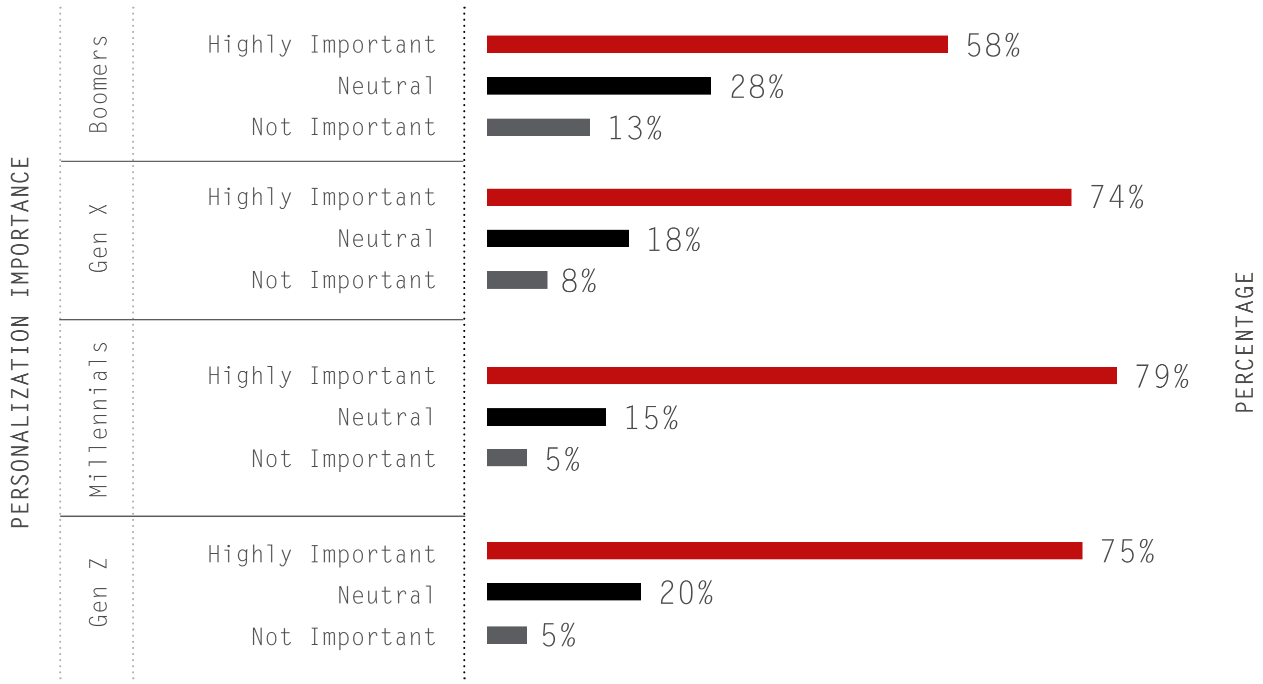
AI-driven chatbots, one of the most powerful trends in financial services, are available to consumers 24/7 and can be configured to collect information, as well as dispense it, which is an upgrade from interactive voice response (IVR) technology[4] where applicable.

Chatbots can help banks reduce customer service costs significantly, while improving the customer's experience by reducing wait times for services and information through around-the-clock accessibility. Customers, especially millennials, are increasingly turning away from calling support and opting for messaging and other self-service channels. Harnessing advances in natural language processing (NLP) and AI, chatbots are becoming more conversational with customers, making financial professionals more efficient and allowing them to learn from every customer interaction.

For example, "Erica," Bank of America's three-year-old pioneering chatbot platform, has proven to be a game changer for customers. Among its capabilities, Erica tracks your bank rewards, looks for spending anomalies that might indicate fraud or error, helps manage bill payments, offers insights on spending patterns, and monitors credit scores.[5] Erica had more than 12 million users[6] in 2020.

But as powerful as Erica and similar technologies can be, this survey raises a cautionary flag as you consider your digital engagement strategy. The statistical evidence illustrates that many customers

IMPORTANCE OF PERSONALIZATION BY GENERATION



CUSTOMER ENGAGEMENT: THE HUMAN TOUCH IS FELT

CONTINUED

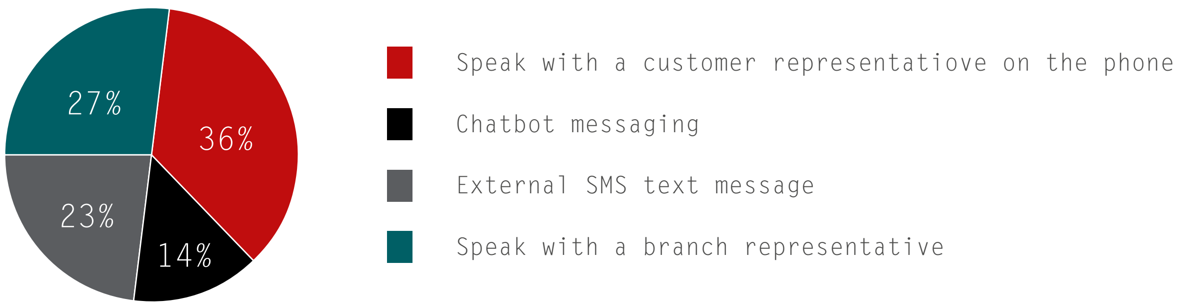
still prefer personal engagement with their banks, either in the form of in-person branch interactions or phone-based customer representatives. The maturity of tools matters. Preferring human interaction can be attributed to the fact that Chatbots, FAQ pages, self-guided digital platforms, or other forms of non-personalized digital services have yet to create the optimal customer experience. While they can assist with the more frequently requested questions, such as "What is my bank balance?" or "How do I apply for a credit card?," they currently struggle to adequately address the more complex consumer dilemmas.

However, it is a mistake to think of this as a robot vs. human dynamic. While the data clearly articulates consumers' desire to continue human interactions with their banks, banks still need to be armed with an armada of technology alternatives. As digital technology in this space continues to improve, so will user reliance on these enhanced capabilities.

While there is an increasing push toward digital interaction, some executives are wary that technology will break down personal relationships, not build them up. Hybrid solutions can help here. Capital City Bank, which prides itself on knowledgeable and friendly tellers, invested in next-generation ATMs[7] (called interactive teller machines, or ITMs) that allow customers to speak to tellers via kiosks located in branches, at drive-up windows, or remote locations. As a result of ITM implementations, banks are able drastically reduce per-transaction expenses – from $4 with an in-person teller to below $1 for a self-service device – while allowing customers on-demand access to branch representatives.

As chatbots and other digital banking technology continue to advance with time, it is crucial to continue investment in self-service digital solutions. As the Erica and Capital City examples show, consumers are more than willing to use digital platforms to address their needs if technology can provide an engaging, convenient, and consistent method of interaction. As customers become increasingly entrenched in technology, continued investment in self-service digital capabilities will provide opportunity to generate increased wallet share.

GENERAL PREFERENCE FOR BANK ENGAGEMENT



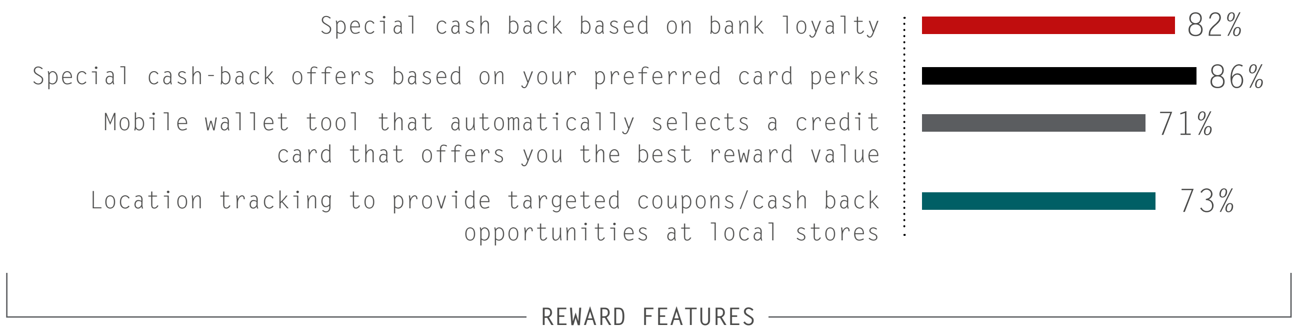
DIGITAL FEATURES: WHAT CUSTOMERS WANT AND WILL PAY FOR

For many banking customers, digitally driven features and personalized services play an increasingly crucial role in keeping them engaged with a bank's brand. But which digital features do they want? Would consumers pay additional fees to have access to these features? This survey uncovered several features perking customers' interest.

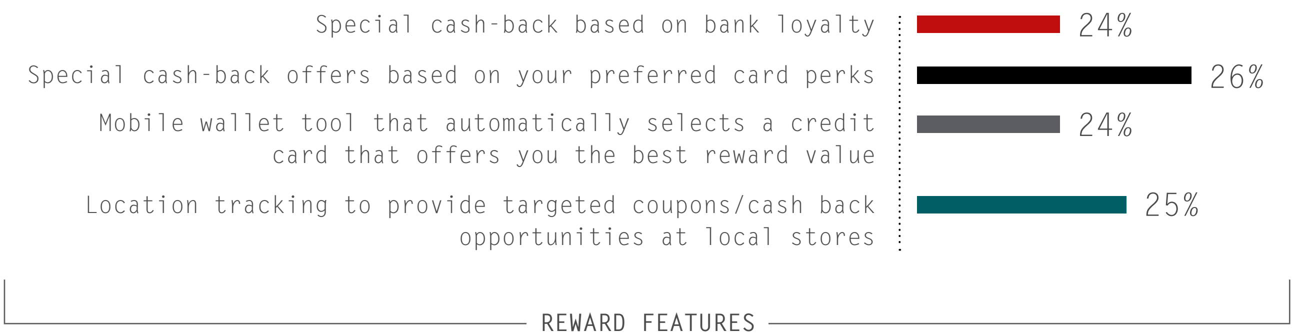
While the overwhelming majority of survey respondents displayed an interest in rewards features, we also asked survey respondents if they would be willing to pay for these rewards offerings.

Younger generations tend to be more inclined to pay for reward features than older generations across all features, signaling a growing focus on rewards from emerging target markets. Generally, when segmented by income, willingness to pay for reward features and income are positively correlated. An outlier is the $25,000-$49,999 income tier, which is less willing to pay than those with under $25,000 in annual income.

GENERAL INTEREST IN REWARD FEATURES



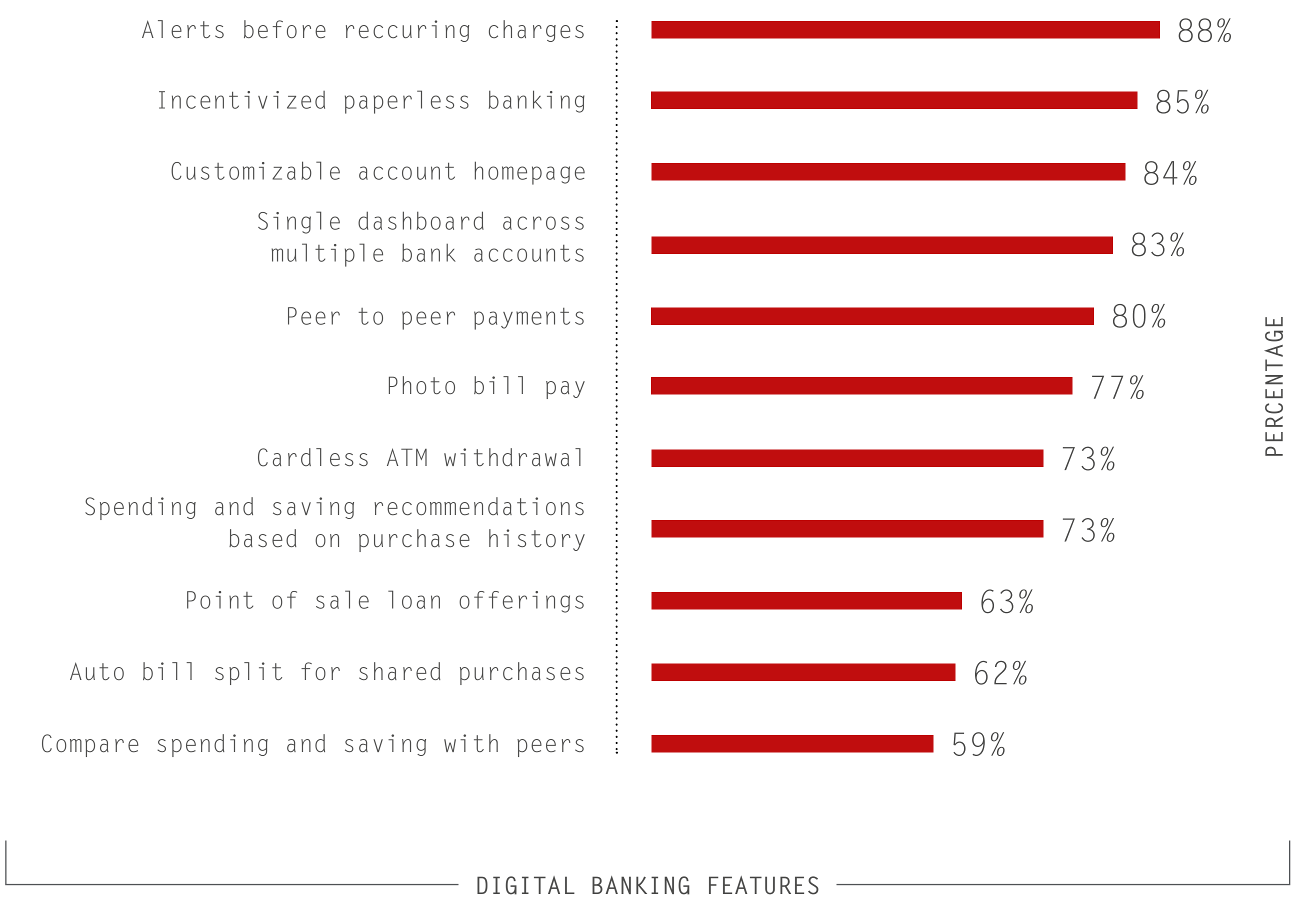
GENERAL WILLINGNESS TO PAY FOR REWARD FEATURES



Rewards, however, are not the only product category customers are interested in exploring at a deeper level. In a related question, respondents displayed a strong interest in digital features designed to enhance the convenience of a customer's everyday experience with their bank.

Many customers desire a "set it and forget it" relationship with their bank. They value text alerts, wish to be notified of opportunities to transact more efficiently, and appreciate the ability to track multiple accounts using a single dashboard. Saving time from dealing with routine tasks is an important offering for customers, as highlighted by customer interest in alerts and dynamic customer dashboards.

GENERAL INTEREST IN DIGITAL BANKING FEATURES



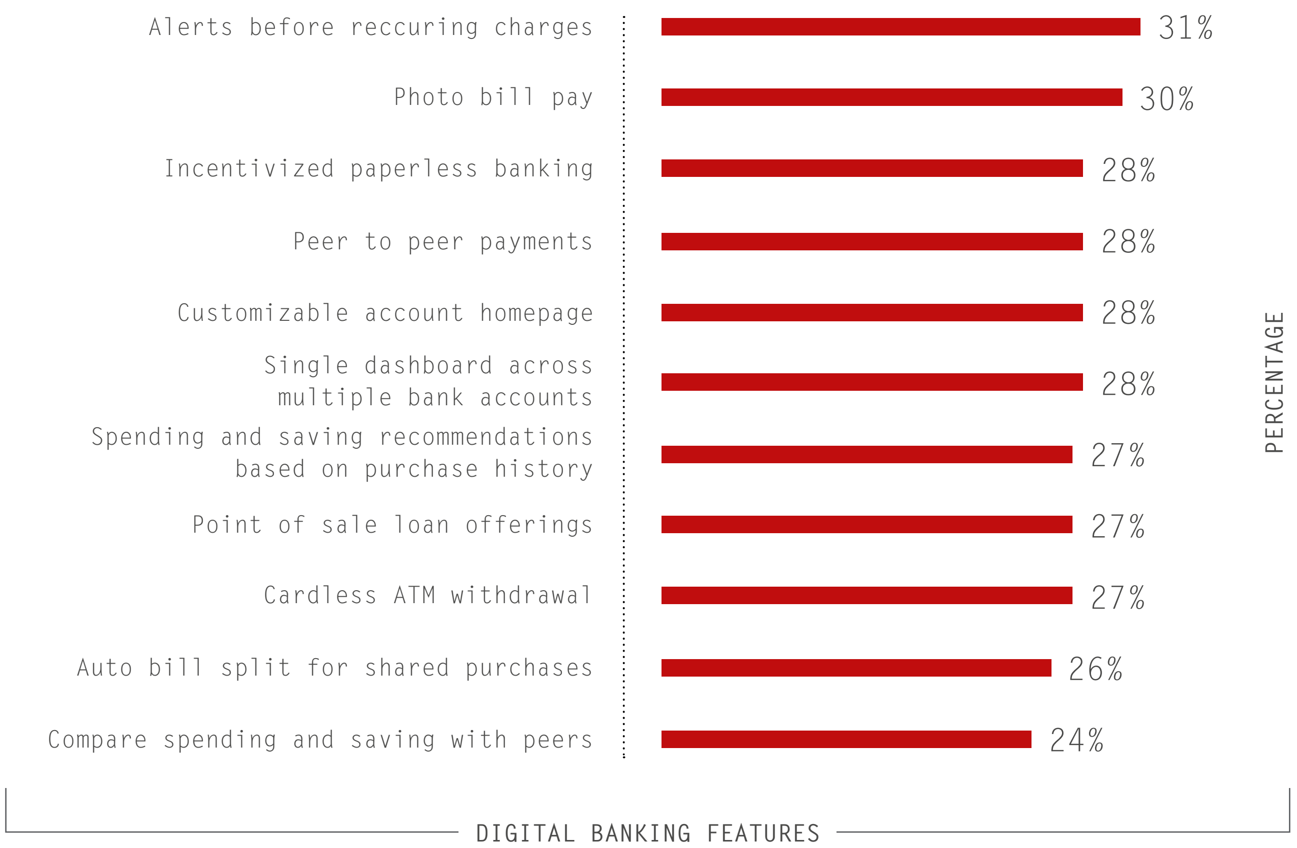
DIGITAL FEATURES: WHAT CUSTOMERS WANT AND WILL PAY FOR CONTINUED

Alerts. Specifically, alerts that notify customers before recurring charges hit (e.g., notifications prior to monthly Netflix payments), generated the highest level of customer sentiment from respondents. Empowering customers through recurring alerts allows them to know what recurring charges are active in their account, determine whether they want to continuously pay those charges, and manage their existing accounts accordingly. In a digital environment where personalization is paramount, customers are beginning to expect and demand digital features, such as this, to empower them financially, at times even outside of their direct relationship with their bank.

Single dashboard across multiple accounts. In current times, customers have bank accounts with multiple financial institutions, and competition to be top-of-mind when customers make a purchase is more important than ever.

Customizable account homepage. Similar to single dashboards across multiple accounts, customers displayed a strong interest in customizing individual account dashboards to meet their personal needs and desires. With limited time and substantial amounts of information at their fingertips, it is important to allow customers the freedom to visualize information in a way that works for them to keep them engaged. For retiring generations especially, online access to dashboards and account homepages (as opposed to mobile) remains important and may necessitate continued investment from financial institutions, due to their generally larger wallet size, to keep them engaged.

GENERAL WILLINGNESS TO PAY FOR DIGITAL BANKING FEATURES

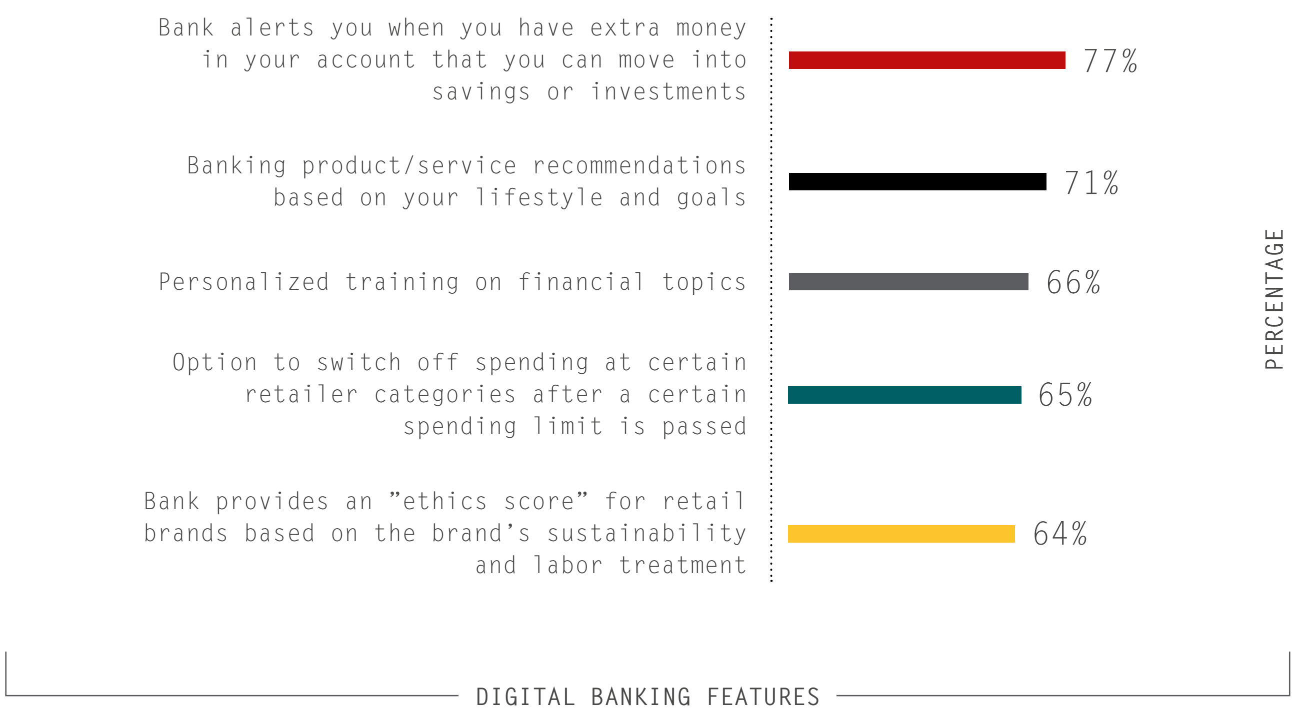


DIGITAL FEATURES: WHAT CUSTOMERS WANT AND WILL PAY FOR CONTINUED

Many customers indicated a desire to pay for digital banking features, with just over 30% of customers indicating a willingness to pay for alerts before recurring charges. Customers were least willing to pay for the ability to compare spending and saving with peers, but willingness to pay still almost breached a quarter of customers. With a strong willingness to pay for features that will enhance the convenience of everyday banking activities, FIs have a unique opportunity to capitalize.

Another area of interest for customers is behavioral banking features, which provide value to customers by increasing the information and guidance available to them.

GENERAL INTEREST IN DIGITAL BANKING FEATURES



Bank alerts when customers have money to move into savings. Customers are most interested in receiving bank alerts when they have extra money in their account that can be moved into savings or investments. Across generational groups, bank sizes (except for regional), and income levels; alerts to move funds into savings or investments are a highly sought-after feature among customers.

Product recommendations. Respondents also indicated an interest in banking product/service recommendations based on lifestyle and goals, highlighting an overarching desire for targeted alerts to keep customers engaged at an individual level.

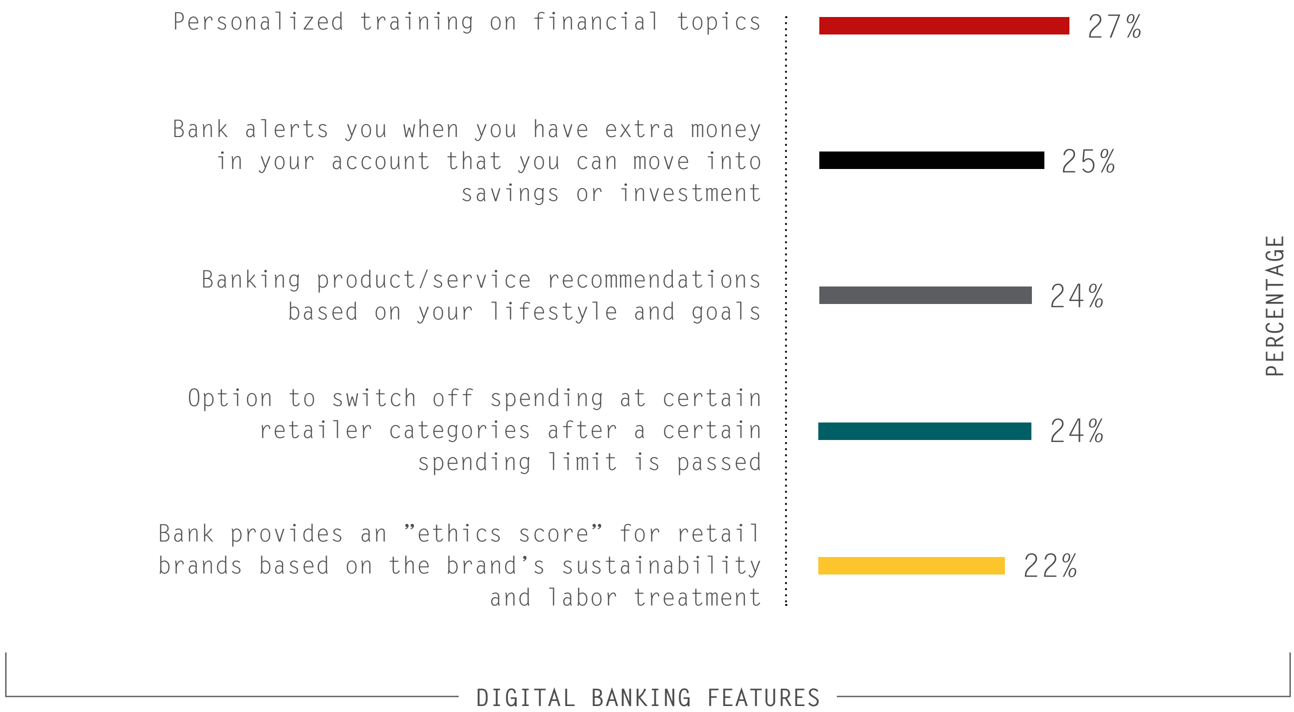
Personal financial training. Although the internet makes available a vast amount of personal financial literacy material, younger generations lack education on these topics. Capital One's "digital cafe" experiment attempts to address this void by offering personal finance courses (as well as a cup of gourmet coffee and interactive kiosks) to teach customers about how to manage their money. Respondents across all income ranges, up to $99,999, are most willing to spend on personalized financial training, with millennials having the highest willingness to pay for this training (41%).

Stop limits. Respondents making more than $100,000 are most willing to pay for the option to switch off spending on specific retailer categories after a specified threshold is exceeded. With greater ability to spend on retailer goods, these customers instead are interested in paying for stop limits on spending.

Ethics scores. Consumers are willing to pay for retail brand ratings based on their sustainability practices and labor treatment. 33% of millennials indicated they would pay for such a service, compared to just 6% of customers in the baby boomer generation, highlighting a trend in social advocacy features among younger generations.

In general, millennials are the most willing generation to spend money on digital features, while customers of super regional and large institutional banks are most willing to spend of all bank sizes. Customers across all generations and bank sizes, however, display a strong interest in digital features. In a changing environment where customers are becoming increasingly interested, empowered, and willing to spend on technology, it is more important than ever for banks to equip themselves with innovative digital capabilities to retain and attract customer wallet share.

GENERAL WILLINGNESS TO PAY FOR DIGITAL BANKING FEATURES



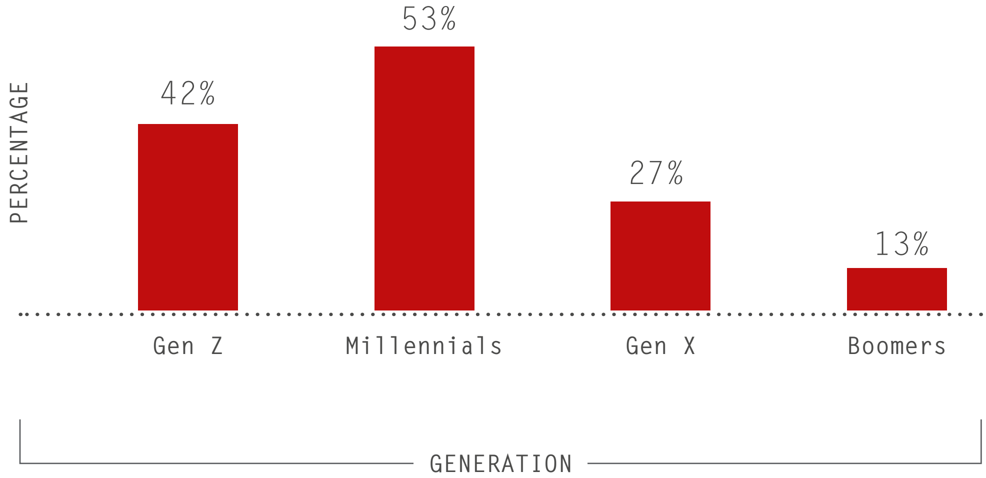
BANK-SWITCHING: HOW TO RETAIN CUSTOMERS

In this increasingly digital economy, it is easier than ever for customers to switch banking vendors. In past days of brick-and-mortar banking, banks had a much easier time retaining customers, as they had to visit one branch to end the relationship and another to switch. Today, consumers can set up a new account with a competitor in less than five minutes through use of a mobile application.

When surveyed about switching banks in the last two years, those in the millennial and Generation Z categories displayed the highest tendency to shift, with 53% of millennials and 42% of Gen Z changing banks in the past two years.

What motivates modern account holders to shop and switch? Across all age, income, and bank size segments, consumers indicated that a fraud incident was a consistent motivator. Approximately 75% of all respondents cited a fraud issue as a reason to question their banking provider.

BANK SWITCHING BY GENERATION

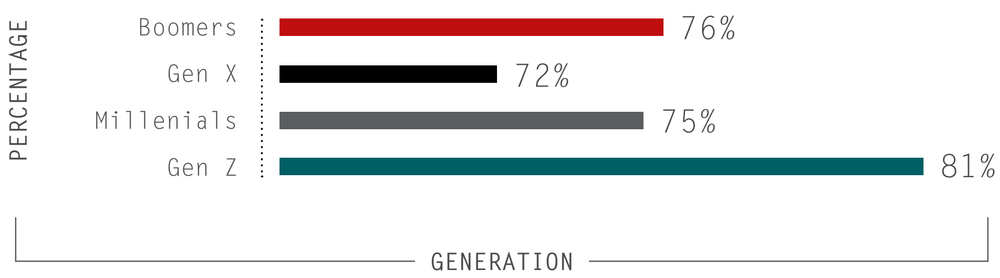


BANK-SWITCHING: HOW TO RETAIN CUSTOMERS CONTINUED

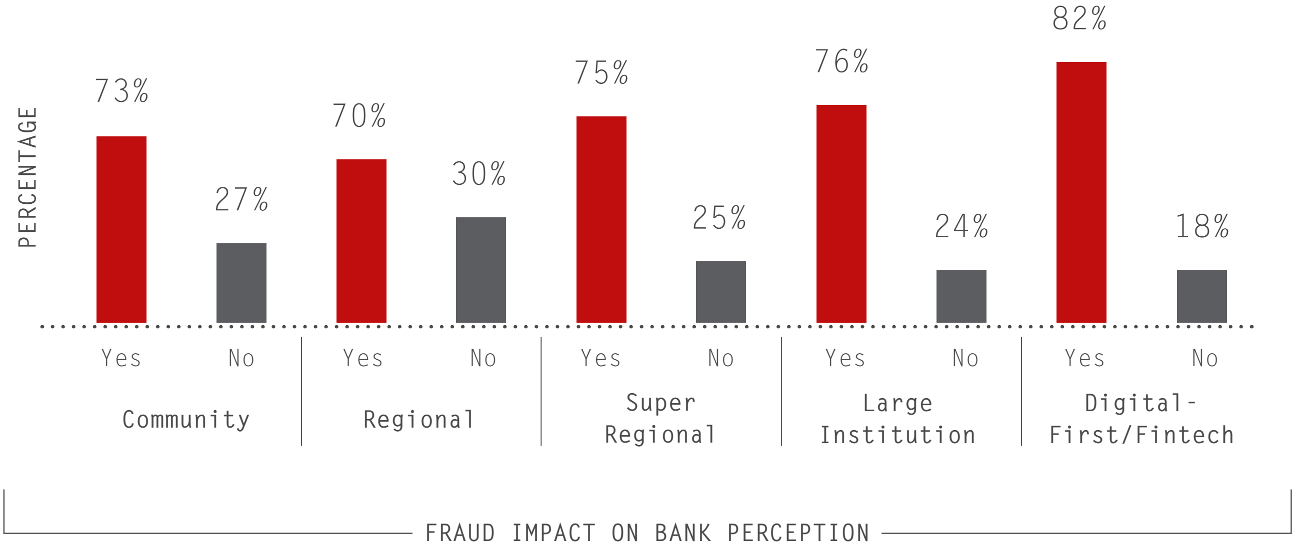
Interestingly, Gen Z is most concerned about fraud incidents (81% of Gen Z versus 76% of baby boomer generation, 75% of millennials, and 72% of Gen X).

People who hold accounts in fintech institutions are also more sensitive to fraud occurrences than other institutions (82% versus 76% of large institutions, 75% of super regionals, 73% of community banks, and 70% of regional banks).

FRAUD IMPACT ON BANK PERCEPTION BY GENERATION



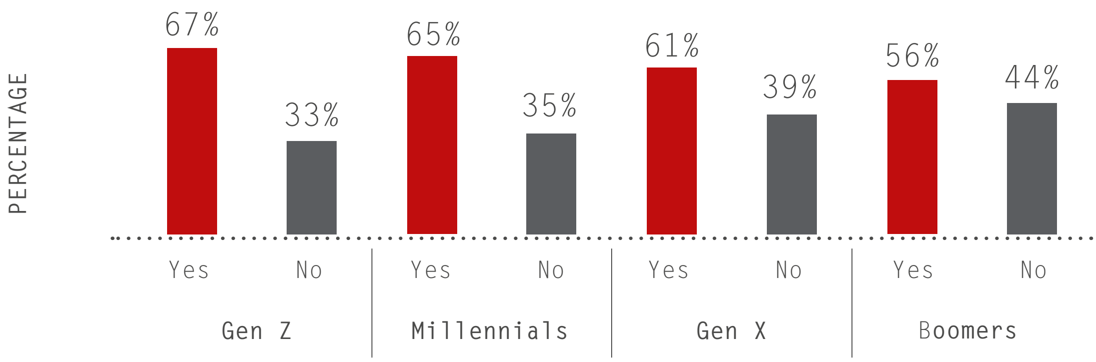
FRAUD IMPACT ON BANK PERCEPTION BY BANK SIZE



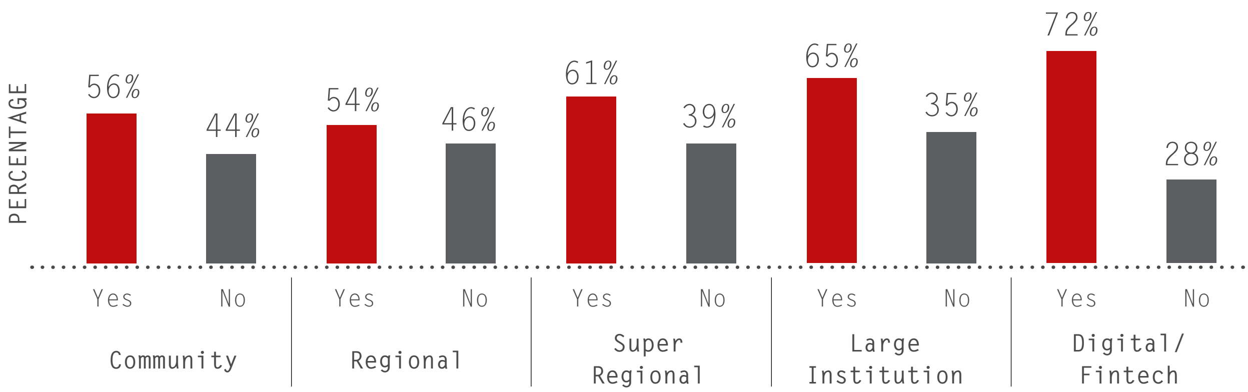
BANK-SWITCHING: HOW TO RETAIN CUSTOMERS CONTINUED

To prevent fraud (and thus reduce the potential for switching), would customers allow banks to track their location? Their age had a lot to do with how respondents answered. The older the survey-taker, the less willing they are to grant such authority. Additionally, customers of smaller banks are less inclined to allow location tracking.

WOULD YOU FEEL COMFORTABLE WITH ALLOWING YOUR BANK TO TRACK YOUR LOCATION TO DETERMINE FRAUDULENT ACTIVITY?



WOULD YOU FEEL COMFORTABLE WITH ALLOWING YOUR BANK TO TRACK YOUR LOCATION TO DETERMINE FRAUDULENT ACTIVITY?



BANK-SWITCHING: HOW TO RETAIN CUSTOMERS CONTINUED

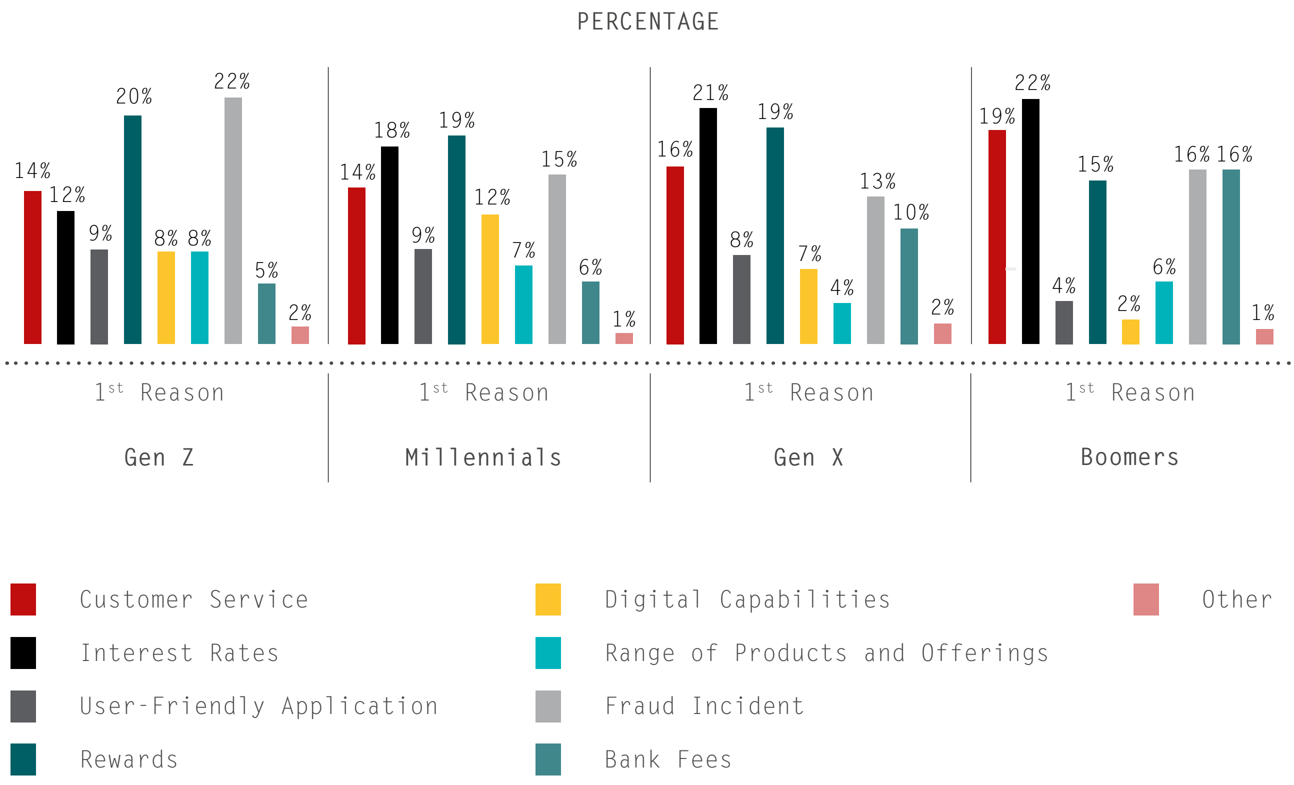
There are a host of additional factors causing consumers to switch banks. We asked bank customers to select their top three reasons for switching banks. Millennials were most motivated to switch banks due to finding better rewards elsewhere (19%) or better interest rates (18%). The baby boomer generation (22%) and Gen X (21%) consider interest rates their top concern when considering a switch.

Few respondents (roughly 10%) of both Gen Z and millennial generations would consider switching banks because of increased bank fees. Similarly, Gen X and baby boomer generations are less likely to be driven to switch banks as a result of broad product and service offerings. They are also less driven to change due to a bank's digital capabilities. But all survey respondents (averaging 16%) indicated a willingness to switch banks if they feel customer service is not what it should be.

What should banks do with this information? In the past, many if not most banks led their marketing campaigns around interest rate messaging. Now, they must decide if marketing low interest rates is appropriate for all existing and potential customers or whether hyper-targeting with different messages for different age groups can yield improved returns for their businesses.

For banks looking to create a more targeted ad campaign to address their diverse market, the survey results showed distinct trends for the baby boomer generation and Generation X, millennials, and Generation Z respondents.

PRIMARY DRIVER FOR SWITCHING BANKS BY GENERATION



BANK-SWITCHING: HOW TO RETAIN CUSTOMERS CONTINUED

Baby Boomer Generation and Gen X. Older, established, and with more assets to manage, a marketing focus on interest rates continues to be of importance to keep these consumers. They grew up with some of the highest inflation rates seen in U.S. history (peaking at 13.55% in 1980), disrupting their buying power, and are therefore making these generations more sensitive to rates in general. Compared with other groups, new products and services are less likely to win their business.

Millennials. Survey data shows this age group is the most likely to switch banks. Millennials are newer to the workforce, enjoying a steady rise in income, and are relatively more receptive to new business relationships. Focusing on creating and marketing products and services most relevant to them through targeted ads will improve financial institutions' engagement and market share. In an environment where large institutional banks currently have more than 50% market share, regional and super regional banks have significant room to grow through competitive products and differentiated servicing targeted to the emerging millennial generation. With a greater likelihood of switching banks, acquiring churn prediction analytics capabilities will help target unengaged millennials as they navigate new entry into the workforce and establish themselves.

Gen Z. It seems natural that these "born digital" users, who are 26 and under, would be most receptive to technology that saves them time. Gen Z is the consumer base most receptive to engaging with chatbots and least in need of human assistance. They therefore also provide the most data rich feedback for banks to leverage as they continue their journey to design the next-generation customer experiences. When marketing toward Gen Z, it is important to maintain a focus on the innovative alerts and personalized features that Gen Z is proven to love.

Despite trends in customer demands, the growth of digital banking services introduces an operating paradox for the industry. By design, digital technologies empower individuals to operate outside traditional channels such as one-on-one consultations with branch representatives or mortgage advisors and transactions with tellers. This trend seems to cultivate less personalized customer engagement, and forces banks into a delicate balancing act. What is a branch location's role when many customers prefer navigating a few screens to apply for a loan? How does an organization balance the seemingly contradictory desire to digitize the banking experience while also maintaining a personalized relationship with each individual customer?

Real personalization is built on a deep understanding of each customer's unique needs and preferences, and by designing a set of experiences tailored to what the customer needs are at different points in their life, across both digital and human channels. Especially as human-centered interactions evolve with customers needing simple, fast, but intuitive digital solutions, banks need to strike the right balance between automation and human interaction.

CONCLUSION

The goal of this survey has been to understand customers' expectations for FIs in this age of digital personalization. Through surveying 1000+ banking consumers, Capco's derived insights into investment opportunities for FIs help banks gain an understanding of what digital features and level of customization banks can monetize.

The primary driver of enhanced customer experience is personalization. The vast majority of customers – across age, bank size, and income bracket – rate personalization as highly important, and investment in personalization will generate significant returns for FIs looking to enhance customer experience. FIs have a significant volume of customer information at their disposal, but many fail to take advantage of this due to an insufficient understanding of the data and how it can provide a holistic view of the customer's personal preferences. The arrival of big tech and its loom over stagnant players in the banking industry is daunting. Action is a requirement.

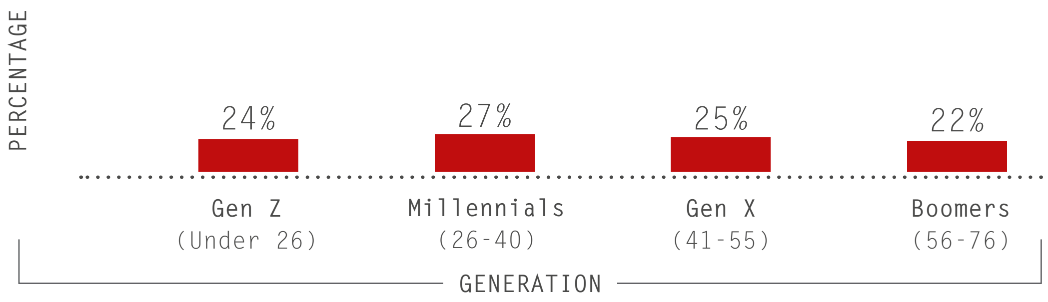
Capco clients are actively contemplating and developing responses to meet and exceed market expectations. The major decisions on the table are how to adequately modernize offerings in a way that aligns to a bank's current and future operating structures, what technology is required to persist the changes over the horizon, and how to deliver differentiated products and services to avoid commoditization. The stakes are incredibly high for the industry, but at the same time, offer opportunity to deliver in ways never before seen, while fundamentally adding more value for customers.

RESEARCH METHODOLOGY AND DEMOGRAPHICS

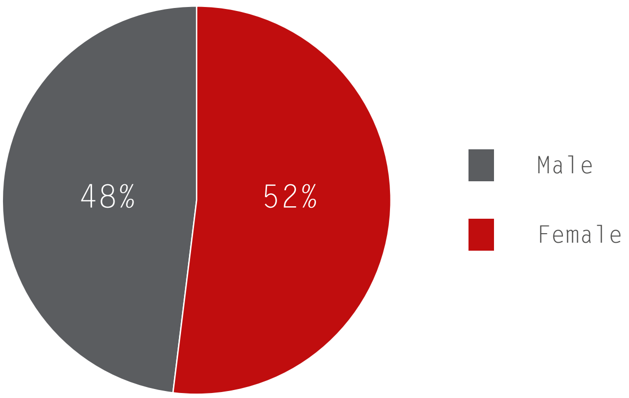
To understand customers' expectations for financial institutions in the digital era, Capco surveyed online 1,008 banking consumers in January 2021.

Survey respondents were distributed evenly across four age categories.

SURVEY RESPONDENTS BY GENERATION



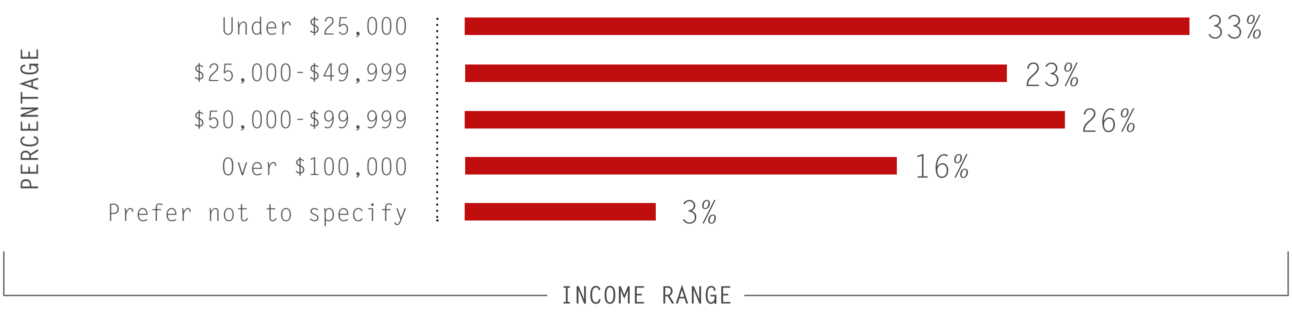
SURVEY RESPONDENTS BY GENDER



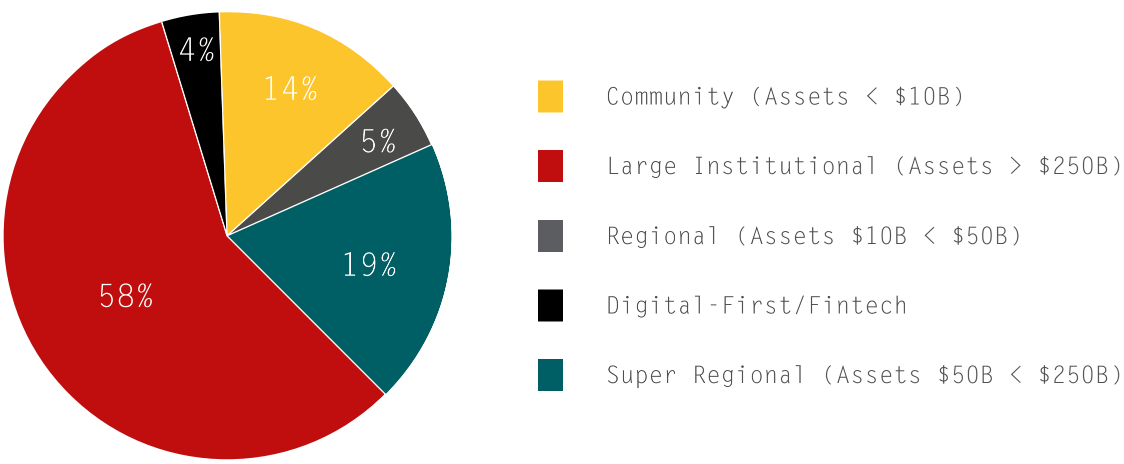
RESEARCH METHODOLOGY AND DEMOGRAPHICS CONTINUED

There was a near even split between genders with 48% male and 52% female. Respondents ranged from between $25,000 in yearly income to over $100,000, with a majority of respondents under the $25,000 income level. Survey respondents are customers of a variety of financial institution type and size, with a majority of respondents utilizing large institutional FIs.

GENERAL INTEREST IN REWARD FEATURES



RESPONDENT BANK SIZE



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3 Rachel Green. “Bank of America’s Erica sees growth as bank prepares for effects of the coronavirus crisis.” April 16, 2020. Business Insider.
https://www.businessinsider.com/bank-of-america-erica-sees-increase-in-users-2020-4

4 Interactive Voice Response (IVR) is an automated telephony system that interacts with callers, gathers information, and routes calls to the appropriate recipients.

5 https://promo.bankofamerica.com/erica/?cm_mmc=OLB-Mobile-Banking-_-Google-PS-_-erica_bofa-_-Brand_Erica&gclid=CjwKCAjw9MuCBhBUEiwAbDZ-7rhVh_LXsoLOCssumpEndds8zc5CC9ZgVVnVIGe9TZ71o5oVDiwRIRoC6TgQAvD_BwE&gclsrc=aw.ds

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https://www.businessinsider.com/bank-of-america-erica-sees-increase-in-users-2020-4

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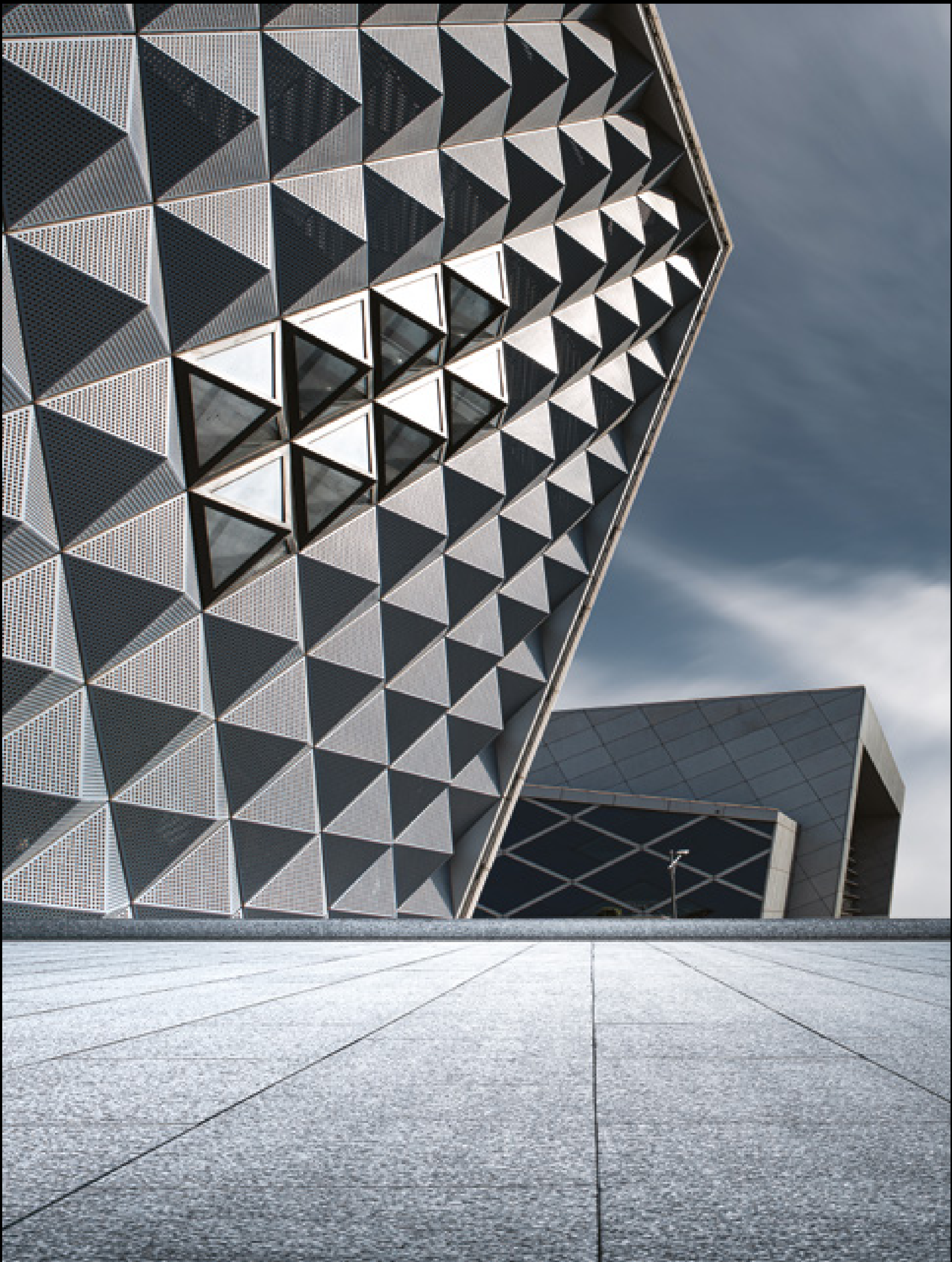

EVOLUTION OF OUTSOURCED CHIEF INVESTMENT OFFICER (OCIO)

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INTRODUCTION

The Outsourced Chief Investment Officer (OCIO) market, which originated in the 1970s from the need to bridge the gap between investment consulting and asset management, has reached multiple inflection points throughout its history and appears to be at one again today. The OCIO market developed its foundation throughout its first 30 years, but it was not until after the technology bubble collapse of 2000-2002 and the Great Recession of 2007-2008 that the OCIO industry experienced rapid growth.

While there was an expectation the industry was moving into early-stage maturity partly evidenced by increased consolidation and slower growth rates, we see a parallel today with the recent market dislocation due to the pandemic helping reshape the evolving OCIO industry as asset owners revaluate their go-it-alone strategies and/or their current OCIO providers.

This crisis, in essence, has heightened the awareness around the difficulties of managing investment portfolios through illiquidity. The need to rebalance has made those that were not using OCIO wonder if they have the expertise to meet the objectives of their organization with its established investment management structure.

The market's potential attractiveness has propelled firms to increase capacity to meet the coming surge in demand, with large OCIO managers investing heavily in technology not only to better manage this growth, but to also address the next wave of outsourcing, mass customization. Therefore, to be successful in the OCIO market, firms need to strengthen their infrastructure, capabilities, and client reach, and achieve economies of scale with high reliance on technology to remain viable.

> *"As we consider the evolution of the OCIO market over time, we see parallels between the market reaction to COVID-19, the Tech Bubble of 2002 and the financial crisis of 2008, inflection points serving as a catalyst for renewed growth."*

MARKET DISLOCATION AND STRUCTURAL CHANGE IS RESHAPING THE OCIO INDUSTRY

The $1.96 trillion Worldwide OCIO market has grown significantly – 51% over the last five years with the U.S. market growing 60% in the same time frame to $1.31 trillion.[1] The OCIO market has grown steadily for more than 12 years, despite the constant expectation that a negative year was lurking right around the corner.[2] The recent market dislocation and market volatility has shined a long-awaited spotlight on whether asset owners selected the right OCIO firms who could meet their performance goals in volatile or down markets.

There are a few trends occurring in the market that any firm thinking of entering and effectively competing should be aware of[3]:

OCIO TRENDS

MASS CUSTOMIZATION	TECHNOLOGY	CONSOLIDATION	INTRODUCTION OF THE ALTERNATIVE OCIO (AOCIO):	PRIMARY FOCUS	INCREASED RFPS
Ability to deliver portfolios for multitudes of clients, built to their unique needs, risk tolerance, and constraints through leading technology	Technology is seen as critical to enhance performance, portfolio management, and automation, and is increasingly an industry differentiator	Leading OCIO firms have turned to consolidation in recent years to strengthen infrastructure, capabilities, client reach, and achieve economies of scale while lowering fees	AOCIOs specialize in alternative investments allowing clients to receive preferential fees from underlying managers while operating in a completely open architecture	Organizations are utilizing OCIO services to handle investment initiatives while they shift focus to their core business functions	OCIOs have been seeing an increase in RFP activity due to COVID-19 from both firms who have not leveraged OCIO services before and those firms looking to change OCIO providers

Source: (1) Capco Research, Global Data 2019 (2) Pension&Investments OCIO Special Report 6/29/2020

OCIO firms need to recognize the importance of understanding the different client segments – their growth, unique attributes, needs, and pain points – to better inform their go-to-market strategy along with infrastructure, technology, and service model requirements.

Though the market has been growing steadily year over year, some segments have been growing at a faster pace. For instance, U.S. Endowments was the fastest growing segment for OCIO managers followed by U.S. Foundations (54.9% and 32.2% respectively).[4] This growth can be attributed to lagging performance for those who maintain investment management in-house contributing to the prospect of turning over investment management to an OCIO manager. In addition, with lower real rates, it is harder for foundations to hit their target rates. Therefore, they are turning to OCIOs for real return to ensure they achieve their charitable mission while supporting long term growth.

RE-EVALUATING THE OCIO GO-TO-MARKET STRATEGY

CONTINUED

In terms of the demand composition of the overall market, defined benefit plans represents the largest segment (at 41% of large U.S. clients)[4], which reflects the relatively complex level of services required by this segment. They tend to not just require overall investment strategy and allocation determination, but leverage investment expertise in hedging risk exposures on liability-matching portfolios and benefit from the OCIO specialist's ability to construct glidepaths and provide endgame advice for maturing pensions.

Defined contribution plans, on the other hand, will look to OCIOs to set overall investment strategies and to assist with selecting managers, but the ultimate allocation decisions are made by the participant rather than the plan, therefore capping the complexity and number of services needed by OCIO firms.

Though there are differences across the segments, there are some commonalities. For instance, a recent survey[5] indicated that better risk management, faster implementation, additional fiduciary oversight, and lack of internal resources drove outsourcing decisions across all client segments.

In addition, within each segment, there are asset owners who turn full discretion over to OCIOs, but there are also asset owners who will utilize their services in a specialized manner. One of the popular areas asset owners are utilizing OCIO services for is their specialization within the ESG space. The growing popularity can be seen across the landscape, but particularly within the nonprofit space (endowments and foundations) where 69% of this group anticipates needing increased support in ESG space, according to a 2019 Cerulli survey.[5]

OCIO CLIENT SEGMENTATION

DEFINED CONTRIBUTION	DEFINED BENEFIT	FOUNDATION	ENDOWMENT
• OCIO services allow plan sponsors to focus on driving better participant engagement and outcomes rather than investments • DC's look to OCIOs to mitigate fiduciary risk, help save time in management of the plan and potentially reduce overall fees • OCIOs are involved in menu design, decision making on funds and managers	• Leverage investment expertise in hedging risk exposures on liability-matching portfolios • Given the terminating nature of many DB plans, they benefit from the OCIO specialist's ability to construct glidepaths and provide end game advice leading to pension closures • Nearly ¾ of asset owners will need advice on pension risk transfer solutions to eliminate the pension liability	• With lower real rates, it is harder for foundations to hit their target rates and are turning to OCIOs for real return to ensure they achieve their charitable mission while supporting long term growth	• Recent performance of US endowments has lagged the market and are turning to OCIO to find this return, set their investment policies, select money managers and monitor performance of the fund • Value extra services such as donor communications and development of educational materials

Source: (1) Pension&Investments OCIO Special Report 6/29/2020 (2) Chief Investment Officer 2020 Outsources-Chief Investment Officer Survey % of Large US Clients. Large is defined as having ~ $580 million in assets

NAVIGATING THE OCIO COMPETITIVE LANDSCAPE

Understanding the key players and competitive archetypes in the marketplace, their current OCIO business model, and where they currently play (i.e., client segmentation) will help dictate a differentiation strategy and define capabilities required to execute on that strategy.

It is important to appreciate the increased competition and level of market saturation across the OCIO landscape. This is partly due to new entrants looking to capitalize on the projected growth trajectory. Different service providers are leveraging their existing relationships as seen by the increased conversion of investment consultants to OCIO managers. Building off these relationships and established trust has proven to be a valued asset for mitigating barriers to entry.[6]

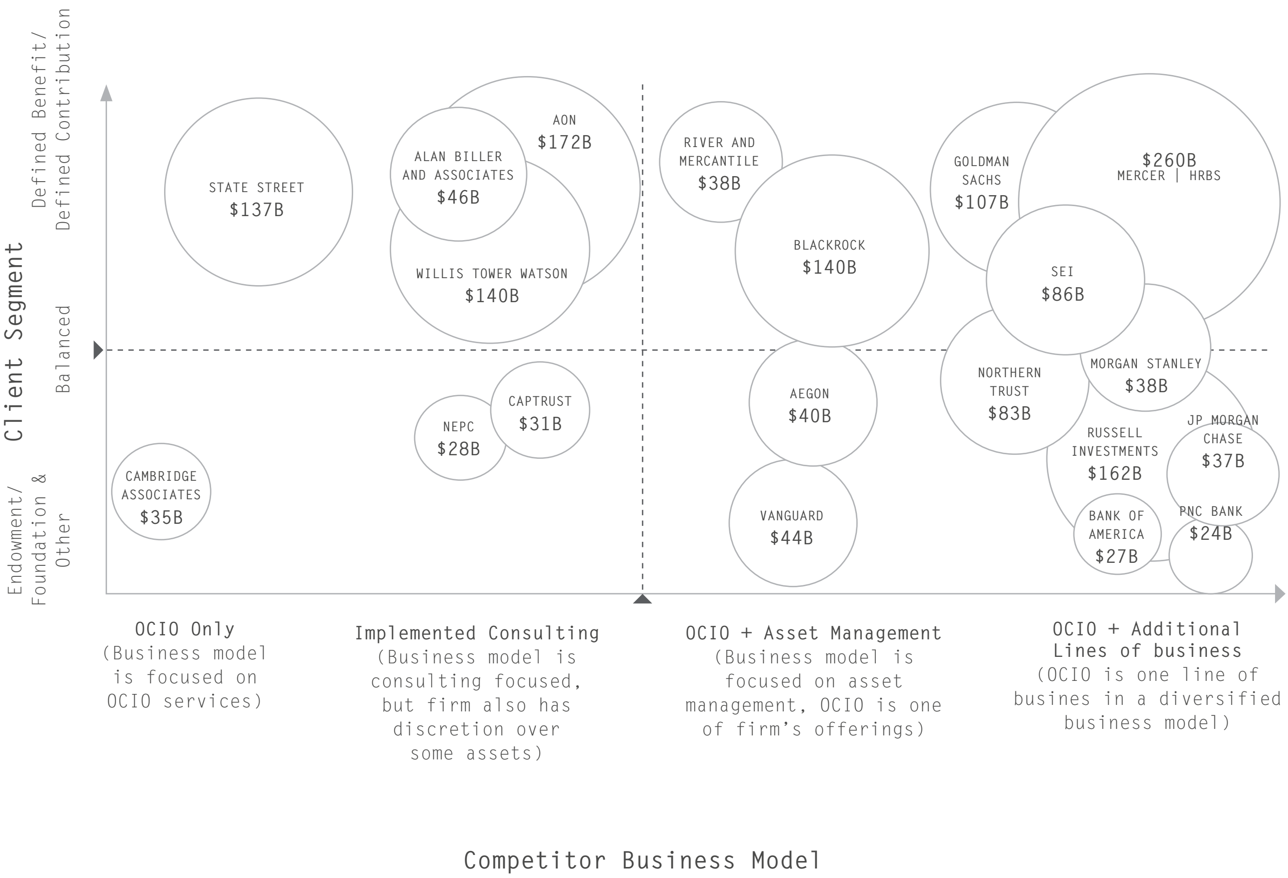
Though there are new entrants into the OCIO market, we are also seeing consolidation at the top. Within the top 20 firms by AUM, the top seven firms held 67%[7] of the total assets allowing them to benefit from economies of scale. In turn, they can invest funds at lower fees than competitors, drastically improve their offerings, and employ cutting-edge technology that leaves other firms struggling to compete.

The OCIO market can be divided into four main business models[8] – firms providing only OCIO services, those who have implemented OCIO services but are consulting focused, asset management firms who offer OCIO services, and finally, the large financial institutions that offer OCIO services as one of their many services.

Typically, these firms focus and dedicate their resources, services, and offerings on one or two client segment groupings, either the defined benefit and defined contribution clients or the endowments and foundations, given the similarities in services desired by both groupings of customers. This is seen even among the largest players in the market, per AUM, where they have a focused strategy. For example, BlackRock[9] uses Aladdin's risk management capabilities to set it apart within the defined benefit and defined contribution space where assistance around de-risking portfolios and liability driven investing is key. And in the endowment and foundations segments, Vanguard[10] and Russell Investments[11] have begun to set themselves apart by investing in technology that provides real-time views across allocations, advice, and risk which are all important to this customer space.

NAVIGATING THE OCIO COMPETITIVE LANDSCAPE CONTINUED

OCIO COMPETITIVE LANDSCAPE



Source: (1) Pension&Investments OCIO Special Report 6/29/2020, AUM as of 12/31/2019
(2) Chief Investment Officer 2020 Outsources-Chief Investment Officer Survey

TECHNOLOGY BECOMES CRITICAL

Asset owners lack the resources and technology necessary to meet overall investment needs, support customized, complex allocations, and provide accurate risk management and are therefore turning to OCIOs to provide solutions. As such, the OCIO business has become one of scale with high reliance on technology. To meet client's evolving needs, 91% of OCIOs have recently invested in technology, 41% built internally, while 50% invested in external technology to meet the coming surge in OCIO industry demand.[8] As the industry matures, effective technology will be a means of survival and serve as a barrier for entry among new firms. With 'mass customization' as the next wave of outsourcing, the ability to deliver portfolios for multitudes of clients, built to meet those clients' unique objectives and constraints and implemented as a cost-efficient solution, will be only possible through cutting edge technology.

CONCLUSION

The Outsourced Chief Investment Officer (OCIO) market, had seen significant growth, but over the last few years there was an expectation that growth would slow. However, recent market dislocation has challenged conventional thinking around this potential growth trajectory as asset owners revaluate their go it alone strategies and/or their current OCIO providers.

As we consider the evolution of the OCIO market over time, we see parallels between the market reaction to COVID-19 and the Tech Bubble of 2002 and the financial crisis of 2008, inflection points serving as a catalyst for renewed growth. This growth in the marketplace is driving increased competition, reaffirming the need for OCIO firms to adapt to this structural change by redefining their market strategies and target customer segments, while challenging fundamental assumptions about their business models to capitalize on subsequent opportunities.

To be viable, differentiate themselves, and meet the coming surge in demand, leading OCIO firms will need to strengthen infrastructure, capabilities, client reach, and achieve economies of scale with high reliance on technology.

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[10] www.vanguard.com

[11] www.russellinvestments.com

SUSTAINABLE FINANCE: THE BIG PICTURE

AUTHORS:
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Marcus Fleig, Germany

INTRODUCTION

The financial sector is vital to fund the structural changes necessary for the transition towards a zero-carbon sustainable economy as set out in the Paris Agreement[1]. Regulatory actions such as the EU Action Plan on Sustainable Finance, as well as shifts in consumer attitudes, have driven firms around the globe to integrate sustainability concerns into their business models and strategies.

As ESG encompasses a wide variety of issues, ranging from the carbon dioxide footprint to diversity in the board of directors to corruption, the spectrum of financial products targeting these is diverse and complex. This paper provides an overview of the global market for sustainable financial products, highlights regional disparities, and explores the rationale for integrating sustainability matters in the investment selection process.

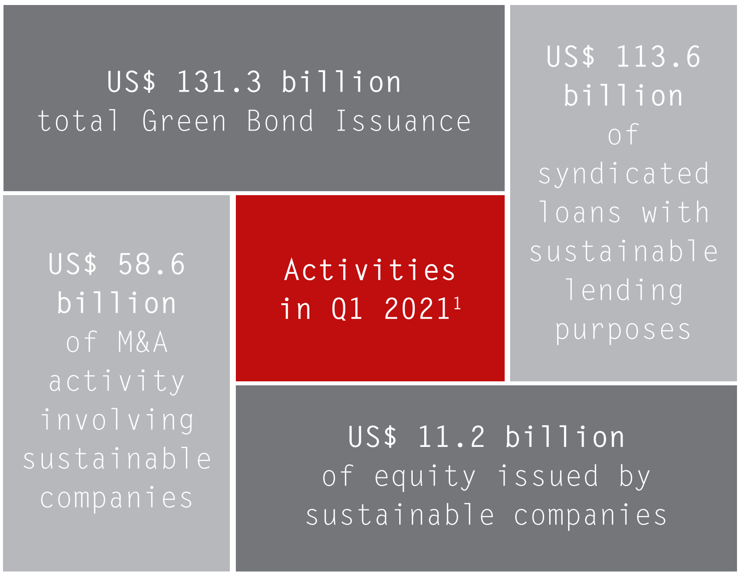
> *“ESG considerations will be relevant for all investors, regardless of whether they pursue sustainable investing as an objective or not.”*

HOW DO FINANCIAL MARKETS REFLECT THE GROWING AWARENESS OF ESG MATTERS?

The market for sustainable financial products has seen significant growth in recent years, developing from a niche phenomenon to a major force in the overall financial market. The chart below provides an insight into the importance of the market for sustainable financial products.

With the expected US$ 53 trillion of global ESG assets under management by 2025[2], sustainable finance presents a major opportunity, which is also demonstrated by the growth of market volumes across asset classes. The volume of sustainable finance bonds issued in Q1 2021 was US$ 286.5 billion, representing a 186 percent increase compared to Q1 2020. Similarly, the sustainable loans volume also more than doubled between these periods. Furthermore, equity issued by sustainable companies was at an all-time high in Q1 2021, with issues amounting to US$ 11.2 billion[3].

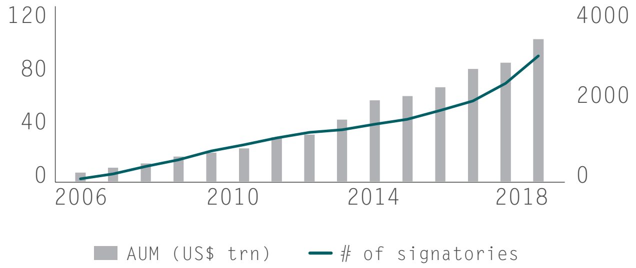
SUSTAINABLE FINANCE MARKET OVERVIEW



Source: [1]Refinitiv: Reports 2021 Q1 – Sustainable Finance Review

SUSTAINABLE FINANCE MARKET OVERVIEW

NUMBER OF PRI SIGNATORIES AND AUM IN US$ TRN[2]



The Principles of Responsible Investment (PRI) are a voluntary set of investment principles that offer possible actions to incorporate ESG issues into business practice. As of 2020, 3038 asset owners and investment managers with US$ 103,4 trillion AUM were signatories of the UN PRI (Source: UN PRI, 2020).

US$ 53trn
expected global ESG AuM in 2025, representing more than a third of projected total AuM, according to Bloomberg.[3]

US$ 6.9 trn
estimated annual investments necessary up to 2030 to meet climate and development objectives (Source: OECD, 2018)[4]

79%
of global sustainable fund flows are located in Europe, showing the strong European leadership in the marke, according to Morningstar.[5]

Source: [2]UN PRI (2020); [3]Bloomberg Intelligence (2021); [4]OECD: Financing Climate Futures: Rethinking Infrastructure Policy Highlights (2018); [5]Morningstar: Global Sustainable Fund Flows: Q1 2021 in Review

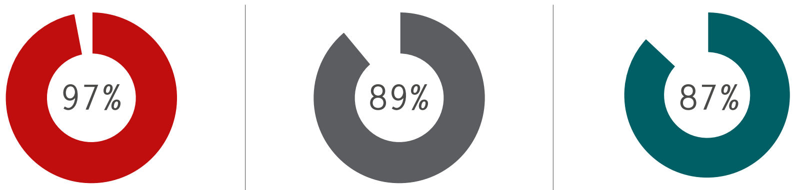
WHAT ARE THE MAJOR DRIVERS OF GROWTH FOR THE SUSTAINABLE FINANCE MARKET?

There are several factors for including sustainability concerns in the investment decision-making process. Besides the alignment of investments with organizational values, there are also pecuniary reasons for the integration of ESG information. The following chart provides an insight into the perception of issuers and investors of sustainable investing.

As evidenced by 76 percent of asset owners citing evolving policy and regulations as an important factor driving the adoption of sustainable investing[4], the regulatory focus on the risks associated with climate change is a major contributor to the increasing significance of sustainable financial products. As pointed out by the Bank for International Settlements (BIS), climate related risks and the associated so-called "green swan" events can potentially be extremely disruptive for the financial sector, jeopardizing the stability of the financial system.[5] Thus, future regulation will continue to focus on sustainability matters and thereby fuel future growth of the market.

Moreover, the steadily increasing quality of sustainability reporting is of substantial importance for the sustainable finance market, as currently 53 percent of investors interested in allocating their assets based on ESG criteria perceive poor data quality or availability of ESG data as a major challenge.[6] With the EU progressing the regulatory framework for sustainability disclosures with the proposed reform of the Non-Financial Reporting Directive (NFRD), data quality and availability will increase substantially in the near future. Other geographies are also making significant progress on the reporting of non-financial information, with more than 1,500 organizations globally supporting the Task Force on Climate-related Financial Disclosures (TCFD) recommendations. The increasing availability of ESG data represents a significant opportunity for investors as it allows to reliably measure and compare the ESG performance of companies.

MARKET PERCEPTION OF SUSTAINABLE INVESTING



Almost all issuers of securities expect to redeploy capital in response to environmental and social challenges and opportunities over the next five years (HSBC Survey, 2020)[1].

The vast majority of investors perceive environmental and social issues as important or very important (HSBC Survey, 2020)[1].

The majority of investors perceive that the COVID-19 pandemic has changed how they consider ESG issues in their investments (HSBC Survey, 2020)[1].

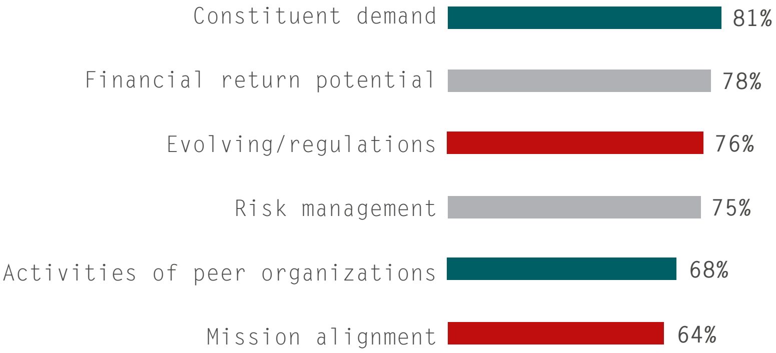
Source: [1]HSBC Sustainable Financing and Investment Survey 2020

WHAT ARE THE MAJOR DRIVERS OF GROWTH FOR THE SUSTAINABLE FINANCE MARKET? CONTINUED

Other major forces driving future growth of the market for sustainable finance are the varying attitudes towards sustainable investing and the generational wealth transfer. Whilst 74 percent of millennials want to achieve a positive social impact with their investments, only 68 percent of baby boomers agree on that[7]. Considering that for the US in Q4 2020, 52.7 percent of household wealth was owned by baby boomers, and only 4.8 percent by millennials[8], the difference in attitudes might have a significant impact on the market for sustainable financial products, once wealth is passed down through the generations.

MARKET PERCEPTION OF SUSTAINABLE INVESTING

FACTORS DRIVING THE ADOPTION OF SUSTAINABLE INVESTING



Percentage of asset owners considering the factor extremely or somewhat important (Morgan Stanley, 2020)[2]

PERCEIVED MATERIALITY OF ESG INFORMATION[3]

97%
The vast majority of investors deem non-financial information material to investment decision making because it affects a company´s reputation and brand.

93%
Perceive non-financial information as material for investment decision making as it exposes potential threats of litigation and regulatory intervention.

85%
Agree that non-financial information signals a company´s long-term approach to business strategy and is thus material.

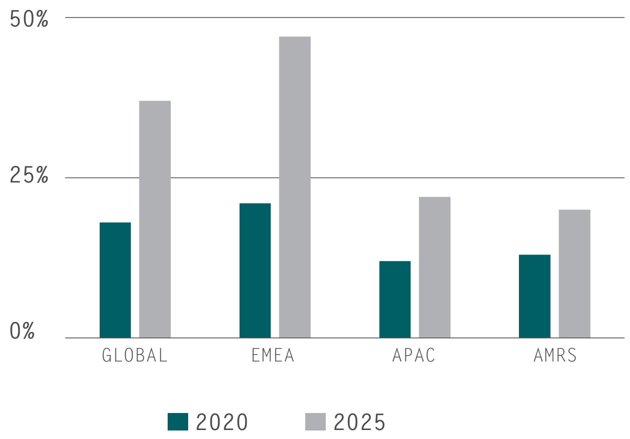
Source: [2]Morgan Stanley: Sustainable Signals: Asset Owners See Sustainability as Core to the Future of Investing (2020); [3]Amel-Zadeh, Amir, and George Serafeim. "Why and How Investors Use ESG Information: Evidence from a Global Survey." Harvard Business School Working Paper, No. 17-079, February 2017

HOW DOES THE PERCEPTION OF ESG DIFFER AMONG GEOGRAPHIES?

The perception of investors and issuers of securities on the future importance of sustainability matters differs strongly across geographies, with some market participants perceiving the development as only a short-term trend, whilst others expect the development to be of a long-term nature. The chart below illustrates how market participants in different geographies perceive the importance of sustainable investing.

The regional disparities for sustainable finance become evident when analysing the expected share of sustainable investment. Whilst American investors expect this share to be at 20 percent in 2025, EMEA investors expect 47 percent of their investments to be made with consideration of ESG aspects.[9] One major reason for this is the regulatory attention the EU devotes to sustainable finance. Channelling private investment into areas driving the transition towards net-zero emissions is one key element of the European Green Deal, aiming to make the EU climate-neutral by 2050.

PERCENTAGE INVESTED SUSTAINABLY

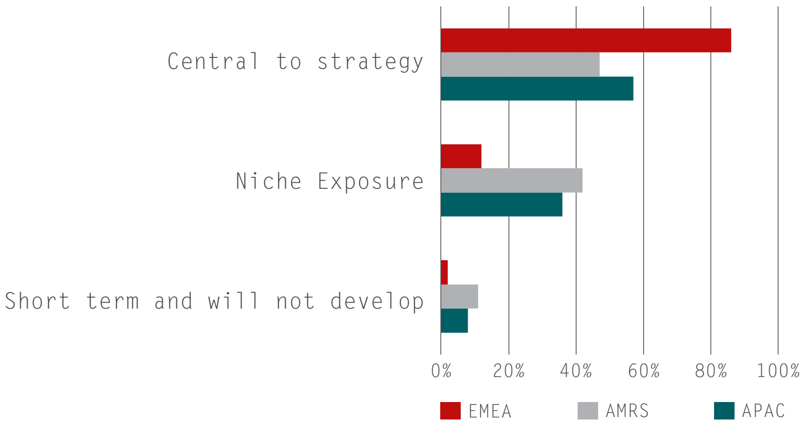


Sustainable investments defined as portfolios with a distinct ESG objective, applying exclusionary screening criteria or optimizing towards ESG (Source: BlackRock 2020 Global Sustainable Investing Survey)

HOW DOES THE PERCEPTION OF ESG DIFFER AMONG GEOGRAPHIES? CONTINUED

However, President Biden's Executive Order on Tackling the Climate Crisis[10] will impact investments made in sustainable finance by US investors. In particular, the US Climate Finance Plan[11], which aims to mobilize capital to assist developing countries in their transition towards a climate-resilient, sustainable economy might create major opportunities in the global sustainable finance market. Notably, 11 percent of American investors still consider sustainable investing as a short-term trend that will not develop further, standing in stark contrast to the direction the regulation is taking[9].

LONG-TERM DIRECTION OF SUSTAINABLE INVESTING



There are strong regional differences in the perception of long-term sustainable investing. Importantly. Globally only 5% of investors believe that sustainable investing is only a short-term trend, showing the long-term perspective most investors take in these matters (Source: BlackRock 2020 Global Sustainable Investing Survey).

HOW CAN ESG MATTERS BE REFLECTED IN THE INVESTMENT APPROACH?

As the size of the sustainable finance market has grown, several approaches for including ESG information in the investment strategy have emerged in the financial industry, ranging from exclusions based on norms or other criteria to impact investing with the goal of achieving ecological or social effect in addition to financial returns. The chart below illustrates the most important approaches investors follow:

Interestingly, despite the widespread use, investors perceive negative screening as the least investment beneficial, with the integration of ESG matters into the investment analysis process and best-in-class screenings considered to be more beneficial.[12] As investors implementing negative screening refrain from investing in certain industries such as gambling or tobacco, they do miss out on the higher expected returns these so-called "sin" stocks achieve.[13]

Research on how integrating ESG concerns into the asset allocation decision process affects performance does not provide a definite answer. El Ghoul and Karoui (2017) provide two competing hypotheses on how integrating ESG concerns in the investment decision-making can affect returns. On the one hand, screening by ESG factors reduces the number of investment opportunities and increases monitoring costs, reducing returns. However, on the other hand, by targeting sustainable companies, fund managers may be selecting firms with strong financial fundamentals, resulting in better fund performance. One study suggests that an increase in the level of corporate social responsibility comes at the expense of reduction in risk-adjusted performance for mutual funds, however investors in more socially responsible funds are less sensitive to performance.[14]

SUSTAINABLE INVESTING APPROACHES

EXCLUSIONARY SCREENING

- Excluding investment projects that do not comply with social or environmental criteria
- Avoiding investments in companies engaged in undesirable activities
- Examples may include exclusions of companies in the tobacco or gambling industry

US$ 19.8 TRN

ESG INTEGRATION

- Inclusion of ESG issues in the investment analysis
- Assessing the impact of material ESG factors on future cash flows, growth rates and competitive position
- Examples may include vulnerability to climate change, board diversity and labor relations

US$ 17.5 TRN

BEST-IN-CLASS SCREENING

- Selecting those investment opportunities, where the company performs better for selected sustainability criteria
- There is a possibility that projects are selected, which, viewed in an absolute context, would not be considered sustainable

US$ 1.8 TRN

THEMATIC ESG INVESTING

- Identifying investment opportunities best positioned to profit from structural trends such as water management and climate change
- Focusing on specific issues (investments could have weak performance on other ESG criteria)

US$ 1 TRN

IMPACT INVESTING

- Aiming to achieve social or environmental effects in addition to financial returns
- Impact measurement based on defined objectives and performance targets

US$ 444 BN

Market Volumes as of 2018, Source: Global Sustainable Investment Alliance, 2018 Global Sustainable Investment Review

HOW IS THE EQUITY MARKET AFFECTED BY ESG?

With more than US$ 11.2 billion of equity issues by sustainable companies[15], the market for equity issued by companies with a sustainable business model is still rather small, when compared to the overall volume of equity issuances of US$ 348 billion in Q1 2021[16]. However, the interest of the stock market in issuances such as the US$ 2 billion capital raise by Plug Power[17], a company developing fuel cell systems for e-mobility, clearly shows that there is a demand for equity by sustainable companies. More important, however, is the effect ESG matters can have for the overall market.

Currently, scientific research does not unanimously agree on whether ESG factors affect corporate financial performance positively or negatively. However, a meta study combining the findings of more than 2000 empirical studies found a non-negative relation between ESG criteria and corporate financial performance in 90 percent of the reviewed findings.[18]

For instance, Cheng et al. (2014) show that firms which perform better for CSR metrics face lower capital constraints.[19] The authors argue that this relation materializes via two distinct mechanisms. Firstly, as better CSR performance is associated with superior stakeholder engagement, managers adopt a long-term rather than a short-term orientation, reducing potential agency costs. Secondly, public disclosure of CSR activities decreases informational asymmetries between investors and firms, reducing perceived risk. In addition, Lamont et al. (2001) show that capital constraints affect firm value because a financially constrained firm is unable to finance all potentially profitable investment projects, resulting in lower returns.[20]

Khan et al. (2016) show that when differentiating between investments companies made in material and immaterial sustainability issues, firms with good performance on the material sustainability issues outperform those with poor performance on these issues, suggesting that investments in sustainability issues can be shareholder-value enhancing. Moreover, it is shown that investments in immaterial sustainability issues have little positive or negative value implications.[21]

Following Cornell and Damodaran (2020)[22], we propose a more nuanced view on investments in sustainability matters. For some firms, investment in corporate social responsibility offers tangible financial benefits, whilst for others they only create additional costs with no offsetting benefits. Therefore, the discussion on whether an investment in sustainability matters is financially viable needs to be done on an individual project and firm basis.

HOW DO ESG CONSIDERATIONS AFFECT M&A ACTIVITIES?

In Q1 2021, global M&A activity involving sustainable companies amounted to US$ 58.6 billion, clearly showing that transactions related to sustainable companies are of significant size.[23] However, when considering that the total value of M&A activities announced in Q1 2021 was at US$ 409 billion for North America alone[24], sustainable transactions currently account for only a small part of the overall market.

Nonetheless, ESG considerations are becoming increasingly important in M&A decision-making, in particular because poor performance for ESG metrics of a target company can pose significant litigation, regulatory and reputational risks for the acquiring company.

In a survey among private equity, asset management and corporate executives, 90 percent of respondents stated that they conduct an ESG due diligence as part of the M&A process, with 67 precent citing business risk including potential litigation as the most important motive for taking ESG into account.[25]

In the context of M&A due diligence, key ESG risks such as climate change, greenhouse gas emissions, diversity and labour practices are evaluated. Notably the list of risks included in the analysis continues to be extended as more ESG information becomes available. To mitigate the risks resulting from misconduct allegations, an increasing number of M&A agreements also contain so-called “Weinstein Clauses” requiring the target to disclose misconduct allegations before the acquisition is closed.

It is important to note that 77 percent of respondents stated that a negative assessment of ESG factors lowers the valuation significantly, demonstrating the need for the acquiring party to invest into restructuring and repositioning the acquisition target if it performs poorly on ESG aspects.[26]

HOW ARE ESG MATTERS REFLECTED IN THE BOND MARKET?

The market for Green Bonds has seen strong growth in the recent years, with companies such as Volkswagen and Unilever issuing Green Bonds to finance their transition to a climate resilient business model. In addition, sovereign green bond issues by the Netherlands, France and Germany show the commitment of the national governments to stimulate the market with these issues certainly having signalling power for the wider financial markets.

However, particularly in light of the COVID-19 pandemic, social bonds have also gained in importance, as social differences have further increased. The chart below provides a more detailed illustration of the market for Green, Social and Sustainable (GSS) Bonds.

SUSTAINABLE DEBT

GREEN BONDS

- Proceeds are used to finance climate- or environment-related projects in the areas of:
  - Energy efficiency & renewable energy
  - Pollution prevention and control
  - Clean transportation
- Major issuers: Daimler, Volkswagen, Unilever, Apple

SOCIAL BONDS

- Proceeds are used to finance social welfare investments for an identified target population, projects funded may be in the areas of:
  - Affordable basic infrastructure / housing
  - Access to essential services
  - Employment generation
- Major issuers: Bank of America, CaixaBank, LBBW

SUSTAINABILITY BONDS

Bonds financing a combination of both Green and Social projects, expected to provide both environmental and social benefits

- Offer a greater flexibility to issuers as they include a more diverse set of eligible investment categories
- Major issuers: Burberry, Alphabet, Starbucks

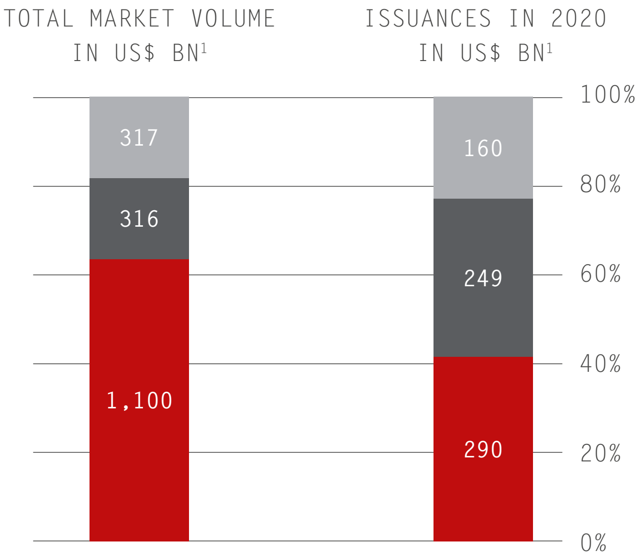
HOW ARE ESG MATTERS REFLECTED IN THE BOND MARKET?

CONTINUED

Risk characteristics of a green bond are essentially identical to those of a conventional bond issued by the same organization, however the majority of studies show that issues of green bonds on average face lower spreads, as an increasing number of investors prefer holding green bonds due to their sustainability promises. However, not all green bond issues are priced at a premium, with some of them priced at spreads above the matched conventional bonds.[26]

Bachelet et al. (2019) demonstrate that for an issuer to realize lower funding costs, an established reputation or a verification of the sustainability claims is necessary, in order to reduce asymmetric information and to guarantee investors that no greenwashing is taking place.[27]

SUSTAINABLE DEBT



Source: [1]Climate Bonds Initiative: Sustainable Debt Global State of the Market 2020

HOW WILL REGULATION AFFECT THE FUTURE OF THE SUSTAINABLE BOND MARKETS?

Currently the Principles for green, social and sustainability bonds issued by the International Capital Markets Association (ICMA) play a major role as best-practice standards in the industry. However, the Principles issued by the ICMA are only recommendations to be adopted on a voluntary basis.

One important regulatory initiative impacting the market for sustainable bonds are the EU Green Bond Standards (EU GBS) proposed in the EU action plan on sustainable finance adopted by the Commission in 2018. The ultimate decision on how and in what legal form the EU GBS is implemented, will be part of the Renewed Sustainable Finance Strategy of the European Commission, which is expected to be published shortly.

Nonetheless, the report on an EU GBS by the Technical Expert Group (TEG)[28] on sustainable finance does give some indication on what the upcoming EU GBS might look like. The proposed EU GBS demand that the proceeds of an EU Green Bond issuance are invested into projects aligned with the EU Taxonomy. As the Taxonomy regulation already demands from companies disclosing non-financial information to include information on their Taxonomy-aligned activities, the insights gained from that analysis can be further processed when issuing EU Green Bonds, facilitating the classification of investment projects for issuers. Moreover, the alignment with the EU GBS needs to be externally verified, reducing the information asymmetry between issuer and investor.

Importantly, the proposal foresees that the EU GBS are voluntary standards, thus issuers not willing to use the term "EU Green Bond" are not obliged to follow the EU GBS, with non-EU issuers also having the option to issue bonds under the framework. Integrating the EU GBS within the EU framework for sustainable finance will certainly be beneficial for the green bond market within the EU, providing greater clarity and consistency on what constitutes a green project.

HOW IS THE LOAN MARKET AFFECTED BY THE INCREASING AWARENESS OF ESG CHARACTERISTICS?

ESG matters are also relevant for pricing loans, as severe ESG issues can result in financial distress, directly impacting a firm's ability to repay creditors. This hypothesis is supported by Goss and Roberts (2011) finding a premium averaging between 7 and 18 basis points for firms with below average ESG records. Especially for unsecured loans, lenders are more sensitive for CSR concerns.[29]

Particularly for investments in carbon-intensive industries such as the oil industry or manufacturing transitory risks play an important role for future profitability. Capasso et al. (2020) indicate that carbon-intense companies face a higher probability of default as their future cash-flows are likely to be affected by progressively stricter climate-related regulations.[30]

Following Ehlers et al. (2021), these risks of climate policy changes aiming to reduce Carbon dioxide emissions are reflected in the pricing of syndicated loans resulting in a loan risk premium for carbon-intensive borrowers. However, the risk premium is not sufficient to fully internalize the potential impact on repayment capabilities by the introduction of carbon taxes. Moreover, as only Scope 1 emissions are priced, the transition risks arising for companies depending on carbon-intensive inputs in their production process are not properly captured.[31]

In view of the unique access to information credit institutions have, taking sustainability information into consideration in loan pricing is necessary to mitigate and efficiently price the risks associated with ESG matters. Sustainability-linked loans offer the opportunity to integrate ESG concerns in the contractual terms of a loan by incorporate pricing mechanisms incentivizing improvements for specific sustainability metrics. In February 2021, Anheuser-Busch InBev announced a US$ 10.1 billion sustainability linked revolving credit facility, with pricing linked to improvements in the areas of water efficiency, recycling, renewable energy and reducing GHG emissions.[32]

HOW DID THE COVID-19 PANDEMIC AFFECT THE MARKET FOR SUSTAINABLE FINANCE?

Social inequality was exacerbated by the COVID-19 pandemic, with the World Food Programme (WFP) indicating that the lives and livelihood of an additional 130 million people are at risk due to the effects of the pandemic, nearly doubling the number estimated prior to the emergence of the pandemic.[33]

In a Capco webinar on the regulatory perspective of ESG, Frank Pierschel, Chief Sustainable Finance Officer at BaFin (Germany's Financial Supervisory Authority) drew attention to this social risk dimension of the COVID-19 pandemic:

"Corona as a (massively materialized) social transition risk has clearly shown us that it can come much faster, entail massive policy decisions, and emerge in a materiality that threatens financial market stability."

As investors are increasingly taking the social and environmental implications of their investments into account, the rise in social risks as a result of the pandemic was reflected by a surge in the social bond market. The volume of issuances reached US$ 249 billion, representing a ten-fold increase on the prior year. Pandemic bonds substantially contributed to this, accounting for 34 percent of social bond issuances in 2020.[34]

Moreover, with several ESG exchange-traded funds and mutual funds outperforming the broader market during the COVID-19 pandemic[35], the business case for investing sustainably has gotten even stronger during the pandemic.

As the pandemic slowly begins to weaken with the vaccination campaigns taking effect, governments around the globe are concerned with the question of how the economic recovery from the pandemic-related losses should be carried out. The recent G7 summit expressed in their joint statement the need for recovery plans to address ESG issues:

"Our plans for the recovery from COVID-19 need to put us on a path to strong, sustainable, balanced, inclusive and resilient growth by not only addressing the immediate challenges arising from the pandemic, but also the long-term shifts in the global economy and society, including demographic, technological, and environmental trends, and inequalities between and within countries, many of which have been magnified by the COVID-19 pandemic."

The so-called green recovery is already taking place, with the Organization for Economic Co-operation and Development (OECD) estimating that within COVID-19 recovery measures, US$ 336 billion have been allocated to environmentally positive measures.[36] This support by public policy measures will certainly further stimulate the market for sustainable finance.

CONCLUSION

Environmental issues are currently at the forefront of sustainable investing with 88 percent of investors prioritizing the environmental aspects of ESG in comparison to social and governance matters.[37] However, the COVID-19 pandemic has clearly shown the need for investments to be made with social objectives.

As we have demonstrated, ESG considerations will be relevant for all investors, regardless of whether they pursue sustainable investing as an objective or not. Higher cost of equity and debt capital for companies subject to exclusions due to environmental screens are an important driver of sustainable economic activities as they have the potential to cause companies to internalize their environmental externalities.[38] Mark Carney, the United Nations special envoy for climate action and finance emphasized in a speech at a European Commission Conference:[39]

> "Financial policymakers will not drive the transition to a low-carbon economy. Governments will establish the climate policy frameworks, and the private sector will make the necessary investments."

Therefore, integrating sustainability considerations into the investment analysis process, business model and business strategy is key to capture the opportunities sustainable finance presents, but also to achieve the goals laid down in the Paris agreement.

Despite the many reasons for considering sustainability matters in the investment process, effectively implementing them in the investment decision-making process and in risk management remains challenging.

Contact us to learn more about how we can leverage the increasing availability of sustainability information for your institution and how to set up the necessary environment for data management and analysis. Take advantage of the opportunities that the shift towards sustainable growth offers your organization.

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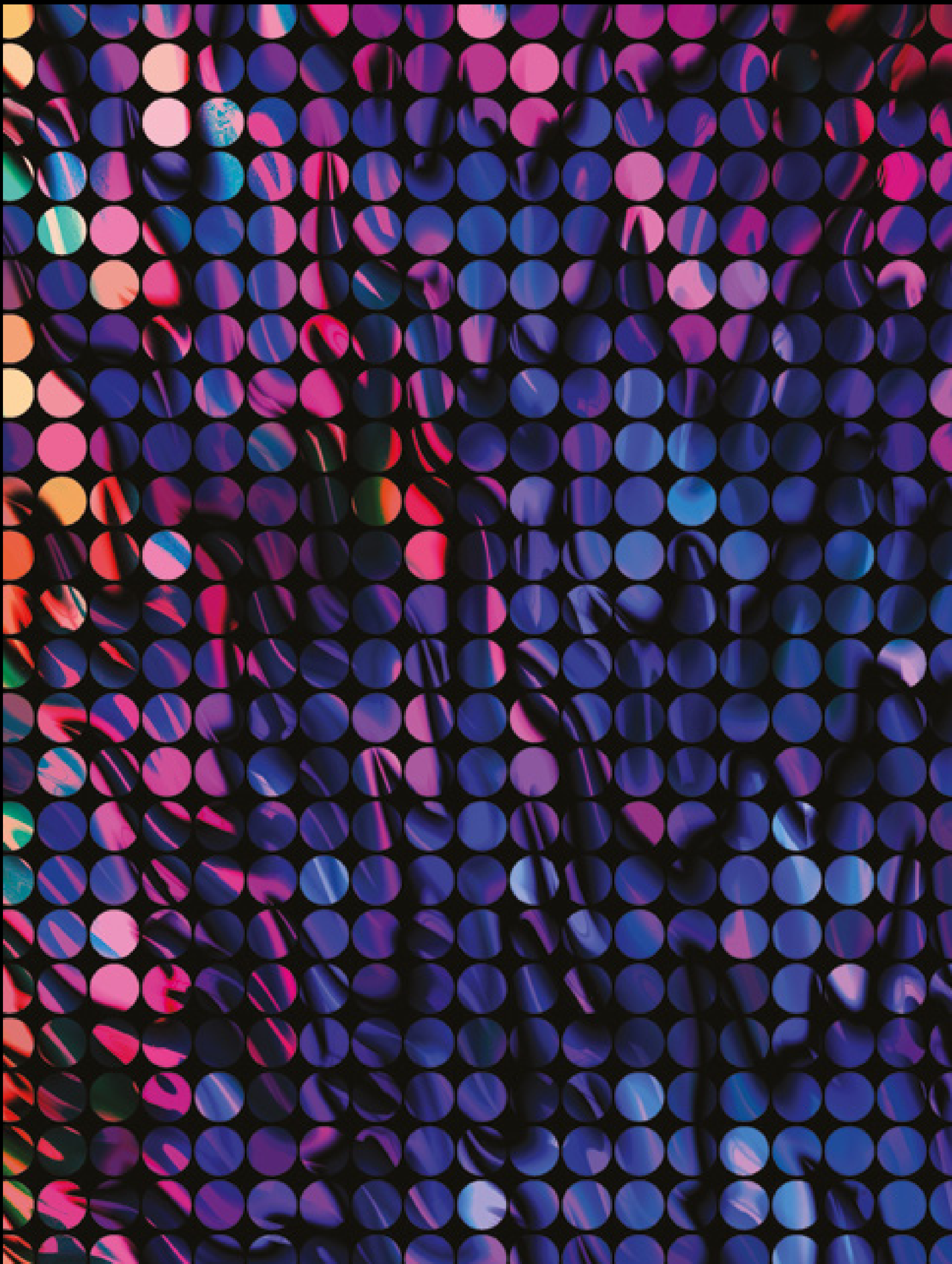

HOW CAN DIGITAL HELP REALIZE VALUE IN CAPITAL MARKETS?

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INTRODUCTION

In today's world, digital has become the go-to answer for capital markets firms looking to solve age-old problems and gain quick efficiencies. The breadth of off-the-shelf solutions that have surfaced in the areas of artificial intelligence (AI), machine learning (ML), robotics, natural language processing (NLP), regulatory technology (regtech) and distributed ledger technology (DLT) show promise of cost optimization and support for revenue growth in a digitally maturing industry.

> *"Artificial intelligence and machine learning technologies can provide the power to harness data that the bank generates organically from bankers, traders, and clients, as well as the ability to drive predictive analytics around both employee and client behaviors."*

KEY TRENDS FOR APPROACHING DIGITAL TRANSFORMATION

Creating a user-friendly digital solution that gets the job done requires a clear understanding of its optimal use case and benefits for users. It also requires an inter-disciplinary team composed of, but not limited to, business units, developers, style/design teams, and solution architects. To become efficient and effective at delivering these solutions, financial institutions have explored and looked to evolve ways of working that position these roles to be pillars that support the firm's strategic goals while maintaining a center of excellence on the ground.

TREND 1

Rapid identification and product-driven execution of opportunities

The more iterative, incremental agile methodology has overtaken the traditional sequential 'waterfall' method of software development in financial services: it embraces cross-functional teams, facilitates rapid development, and is conducive to the 'fail fast, fail often, and fail forward' mantra. If implemented correctly, agile is capable of significantly improving time-to-value; projects whose duration would typically be measured in years can be delivered sooner.

Firms should create a way of working that allows the rapid identification and execution of opportunities with the following considerations:

Aim to break internal siloes. Siloed development of digital solutions runs a high risk of accruing technical debt once implemented or of failing to achieve end-user/customer outcomes. Financial institutions should aim to bridge gaps across domains to rally towards common goals and ensure disparate capabilities are developed with the framework of a common product vision.

What are current development timelines for minimal viable products (MVPs)? Financial institutions should embrace a 'fail fast, fail often, and fail forward' mantra that is key to product development. By aiming to develop MVPs in '2-3 week' sprint cycles, financial institutions establish the foundation for creating a culture of rapid execution that can significantly improve a firm's digital transformation timeline.

Rapid Identification

Rapidly identify opportunities that can improve cost, efficiency, and client experience. Fail fast, fail often, fail forward.

Democratization of Development

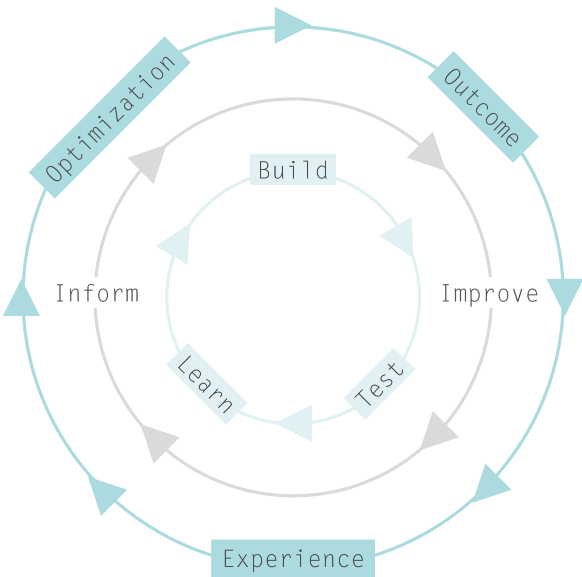
Bring operations, the process SMEs, into the development lifecycle with Low- or No-Code platforms.

Digital Orchestration

Assess your firm's ability to orchestrate change. Even with the most cutting-edge technology, poor orchestration can result in lower ROI.

KEY TRENDS FOR APPROACHING DIGITAL TRANSFORMATION

CONTINUED

	PROJECT MINDSET	PRODUCT MINDSET
FOCUS	Deliver scope on time under budget	Business and customer outcomes
APPROACH	Design Build Test Launch	
RESULT	Mediocre product delivered on time and under budget	Continuously improving, lovable, product and maximized budget

KEY TRENDS FOR APPROACHING DIGITAL TRANSFORMATION

CONTINUED

TREND 2

Use of a digital platform to gain efficiencies, democratize development, and focus employees on value-add tasks

Accelerating digital transformation with low/no-code platforms. Few financial institutions have the financial and human resources to meet market demand for rapid software development via traditional coding. One key trend to accelerating the transformation process is to democratize the development of digital capabilities through low/no-code platforms – a collection of tools that enable the visual development of applications. As open API solutions, low/no-code platforms allow a firm's employees to build applications to augment any data sets, legacy processes, or even expand on new applications such as RPA with little to no software experience.

Retraining vs. replacing the workforce into the Next-Gen workforce. Firms should consider training and upskilling their current workforce while investing into digital. In tandem with using low/no-code, firms can train their current operations personnel to use these platforms, develop 'citizen developers,' and equip them with the required skill set to assist in simplifying and streamlining the processes they own. A key advantage of this model is that it inspires a new way of working. Upskilling and training operations staff to become a part of the firm's digital culture feeds into one of the most sought-after attributes that current and potential employees look for in the workplace: the opportunity to learn. It ensures individuals feel their skill sets are relevant in what is a fast-evolving industry and allows them to play a key part in the next-gen workforce.

TREND 3

Successful digital transformation – that results in growth and cost efficiency – is a function of not just an organization's capabilities, but how well it orchestrates across capabilities and value creation

Orchestration is the ability to utilize a firm's resources across disciplines and business lines in an efficient and productive manner. When capabilities of capital markets firms advance faster than orchestration, we often see lower return on investment (ROI) due to the need for rework and the duplication of effort. Firms with higher levels of digital capabilities and, more importantly, orchestration maturity bridge gaps across domains, and ensure that disparate capabilities and entities all move in the same direction. This leads to better user and client outcomes, delivering the promise of growth and efficiency at the same time.

- **Capabilities maturity**. Firms should have robust methods for benchmarking and modeling customer experience and for driving towards client insights. Combined with the orchestration, a digitally based design can also be tailored to client/user preferences to improve experience and overall stickiness.

- **Orchestration maturity**. Firms must aspire to become a 'modern' organization – one that has product managers, operational engineers, system architects/engineers, key business stakeholders, and a 'servant leader' to manage the value chain across capital markets. Furthermore, businesses and enterprise capabilities must continue to align and structure themselves to the client/user experiences. Finally, capital markets firms must embrace creative thinking to equip employees from many industries with innovation skills to co-create and spark innovation across functions.

$$Tr = C \times O$$

Transformation Capabilities Orchestration

WHAT ARE THE KEY DIGITAL OPPORTUNITIES TO PURSUE?

Artificial intelligence and machine learning technologies have numerous applications across the Sales, Data, Operations and Compliance functions. They can provide the power to harness data that the bank generates organically from bankers, traders, and clients, as well as the ability to drive predictive analytics around both internal employee and client behaviors.

- **Auto lead generation for sales traders/front office**. While it goes without saying that all major investment banks must subscribe to an effective CRM solution, such as Salesforce, it is also imperative that banks adopt more forward-looking ways of engaging clients, such as automated lead generation. Banks can use an AI-powered chatbot to help their clients (e.g. large corporates) learn from existing conversations happening onsite between sales traders and their clients. Companies such as Drift currently provide this service. Information gathered from existing chats enable the bot to answer questions, understand what a good lead looks like, and generate leads organically at scale. Banks can leverage external solutions or create in-house tools to enable more effective lead-generation, based on learnings from prior interactions.

- **AI for surveillance (front office)**. Biometrics, employee card swipes, and facial recognition software are already in use across most banks and trading desks. What is more interesting is how employees will be monitored in a distributed working from home fashion, as during the pandemic. Employee monitoring software, such as Microsoft MyAnalytics, can be used to monitor employee behavior, but such tools are nowhere near as effective as the 'on-premise' surveillance technologies implemented at the office. Surveillance will need to continue to evolve as people adapt to a hybrid model of working.

ARTIFICIAL INTELLIGENCE / MACHINE LEARNING	
Auto Lead Generation	Surveillance
Bucketing Transactions	Collateral & Liquidity Management
Telemetry	Client Insights

REGULATORY TECHNOLOGY (REGTECH) AUTOMATION
Name Screening
Conduct Risk

DISTRIBUTED LEDGER (DL) TECHNOLOGY
Settlement of U.S. Treasury Securities
Settlement of Equities

WHAT ARE THE KEY DIGITAL OPPORTUNITIES TO PURSUE?

CONTINUED

- **AI for bucketing LIBOR fallback categories (operations)**. As banks worldwide transition away from LIBOR to alternative reference rates, data relating to thousands of trades must be managed, with an automated solution needed for assigning fallback categories. Data providers such as Bloomberg are making fallback categories available for cash securities such as bonds; however, a more complex solution is required for securitized products. Banks are creating AI-driven bucketing tools to assign fallback categories to trades for products such as ABS, MBS, etc. While the tools are still being refined, and in some cases providing false positives, they help in assigning fallback categories for up to 80% of all trades, leaving only a small fraction to be reviewed manually by legal teams looking to negotiate favorable terms with counterparties.

- **Machine learning for resolving margin calls and collateral management disputes**. Several banks and vendors are investing in ML technologies, which can review and categorize margin calls and collateral disputes as they arise. The number of margin calls and collateral disputes has risen exponentially in recent years due to an increase in regulations such as un-cleared margin rules (UMR). The machine learning algorithm assigns monetary values to each dispute, saving collateral management and data teams the time and manual effort needed to categorize disputes. More sophisticated tools can resolve disputes, eliminating the need for manual intervention entirely.

- **Telemetry for application performance monitoring (APM)**. The business and financial impact of unplanned downtime is significant. Application monitoring provides an ‘X-ray’ into the real time performance of complex systems so organizations can prevent or mitigate outages that affect their customers and bottom line. Firms such as App Dynamics and New Relic are providing distributed, diverse suites of applications so IT organizations can safely and reliably operate their complex solutions in the face of dynamic needs or workloads. Best-in-class APM solutions can:

  - Inject detailed tracing information
  - Enhance, collect, and harvest telemetry data
  - Provide dashboards/ visualizations
  - Produce actionable alerts and notifications
  - Analyze current behavior against historical trends
  - Predict – via statistics and machine learning – the possible failure of components.

HOW CAPCO CAN HELP

OPTICAL CHARACTER RECOGNITION AND NATURAL LANGUAGE PROCESSING

Over the past year, financial institutions have deployed digital onboarding platforms to speed up the collection of know-your-customer (KYC) information. However, many platforms have yet to automate end-to-end onboarding to further reduce their KYC lifecycle and simplify client journeys. Optical character recognition (OCR) and natural language processing (NLP) - two forms of AI together known as document imaging technology can expedite onboarding, cross-utilize existing data and deliver insights into clients' needs and preferences to make onboarding a competitive differentiator.

- **Optical character recognition and natural language processing to optimize onboarding**. By using OCR and NLP, financial institutions can reduce this operational burden and improve clients' experience by automating the process of 1) reading scanned documents; 2) extracting key information; and 3) systematically consuming and reusing that information in the underlying IT systems. In one example, a leading US bank implemented an enterprise KYC solution that automated data extraction from various documents (i.e. legal, email, news, etc.) and used that information to conduct automatic risk screenings and checks[1], resulting in a reduction to the KYC lifecycle by 30-50% and client outreach by 30%[2]. From their clients' perspectives, it streamlines a frustratingly lengthy process that can take weeks to months of back-and-forth communication, and, anecdotally, disappear in a 'black box'.

- **Natural language processing to provide insights into client needs**. The application of NLP goes beyond just client onboarding. NLP has the ability to analyze unstructured human speech and organize it into consumable data, a powerful capability that can be used to look into client preferences and needs. In one example, a tier 1 global bank implemented NLP to read Bloomberg chat interactions with clients and mine for key phrases in deals that were completed and deals that were not. By analyzing not just individual instances of failed deals, but every failed and completed deal over a period of time, NLP provides financial institutions the ability to create insights into how business and deal practices can improve.

  Given the troves of unstructured data that capital markets firms have yet to rationalize (i.e. emails, chats, legal documents), with the right strategy we view NLP as a powerful tool that can change how financial institutions define their competitive edge.

REGTECH AUTOMATION TO EASE THE BURDEN OF OVERLY COSTLY REGULATORY COMPLIANCE

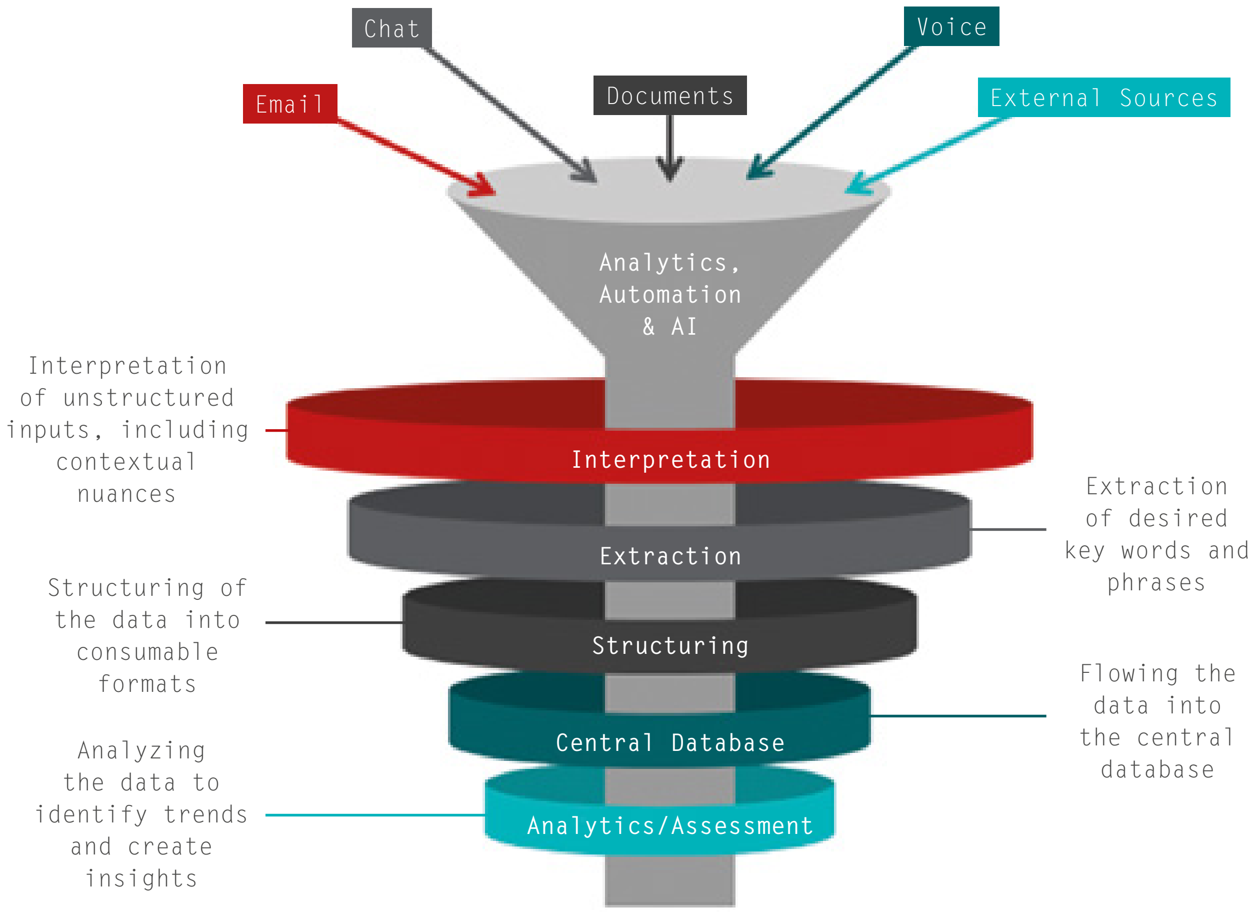
In 2020, financial institutions paid $10.4 billion in fines for violations relating to AML[3]. It would be an incomplete statement to say that these fines are simply a result of highly manual compliance operations susceptible to missed information, poor audit trails, and inconsistency. Rather, regulation changes regularly and means financial institutions face a very challenging task remaining compliant. Vendors today have created regulatory compliance solutions that leverage a combination of advanced analytics and intelligence that can not only reduce the burden of change efforts but also reduce operational costs.

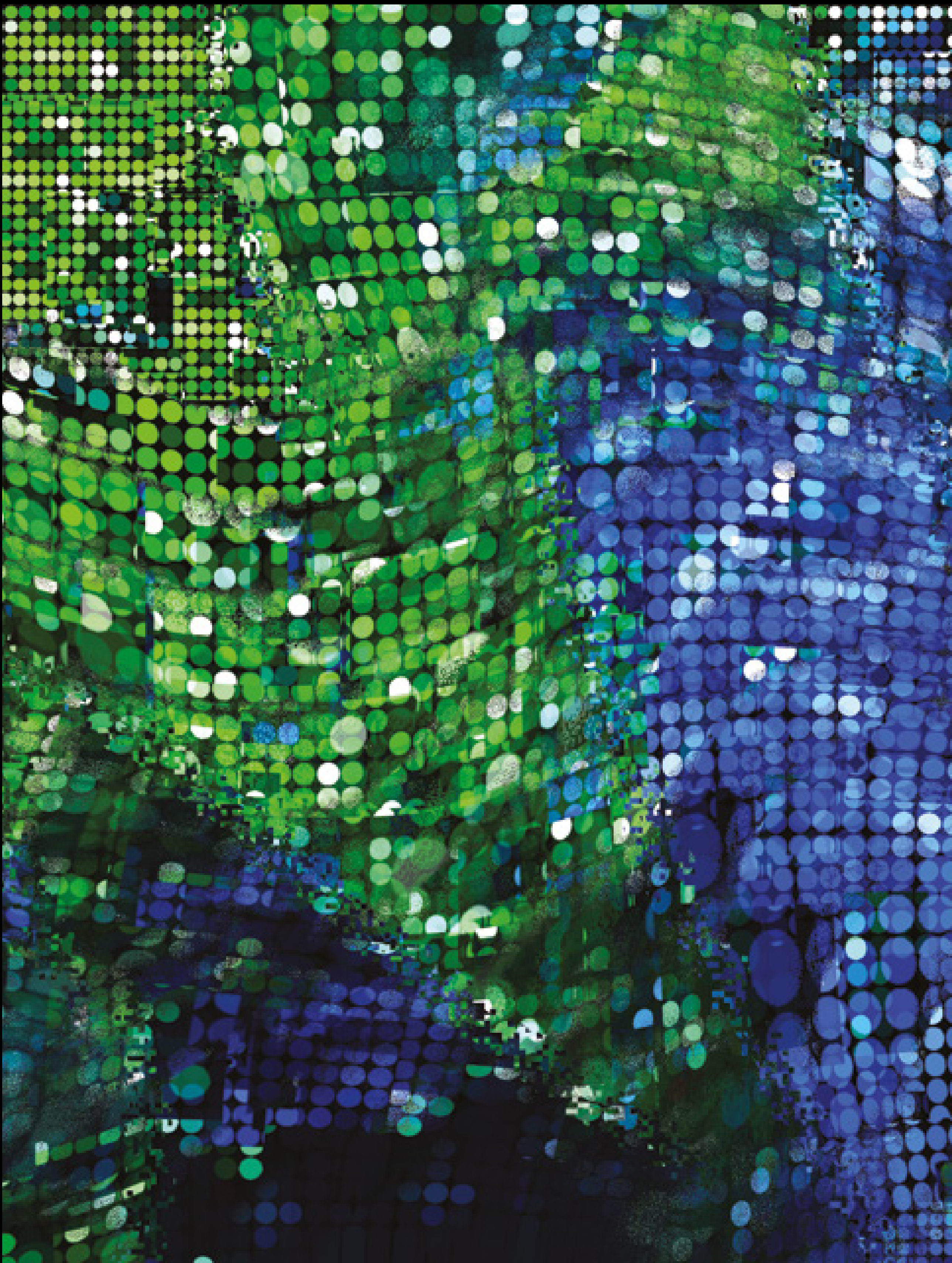
- **Regtech to manage conduct risk holistically**. There is always ahigh risk of employees potentially gaming the system of conduct risk management, as current methods of managing conduct risks – by identifying irregularities on a rules-bases – are reviewed in individual sets that rarely 'connect the dots'. Regtech solutions leverage NLP, AI and advanced analytics to enable firms to take a more holistic view of their employees' behavior. By sourcing data from several data sets (i.e., chat logs, emails, call recordings, access logs for applications, etc.), regtech allows computers to conduct comprehensive assessments of employee interactions. At a high level, regtech can empower risk management programs by conducting the first round of risk identification, leaving only the high-risk cases to be scrutinized via human review.

- **Regtech to reduce costly false positives in customer name screening**. Current methods of compliance to Bank Secrecy Act (BSA)/AML name screening – for sanctions and politically exposed persons (PEPs) – are also an area ripe for potentially vast improvement. In 2020, global financial institutions paid $10B+ for AML violations[4], while spending towards compliance has steadily risen. The fines are often a result of staff manually reviewing thousands of individual false positive name screening alerts on a regular basis, a

Optical character recognition (OCR) is a digital technology that automates data extraction from typed, printed, or written text, such as a scanned document.

Natural language processing (NLP) enriches this process by enabling those systems to recognize the nuances of the human language (such as speech patterns and slang).





HOW CAPCO CAN HELP CONTINUED

process susceptible to inaccuracy and inconsistency (as well as material cost). Through a collective network of sourcing data from internal bank KYC database(s) and external (e.g. government information) portals, automation can reduce the rate of false positives by up to 80%.

DISTRIBUTED LEDGER TECHNOLOGY CAPABILITIES TO IMPROVE EFFICIENCY, SECURITY, AND SPEED

Distributed ledger technology – or blockchain technology – refers to the technological infrastructure that allows simultaneous access to an immutable ledger (a database). DLT – or blockchain technology – provides efficient and resilient information transfer that are estimated to save capital markets billions in operating expenses, once adopted in full. The industry is at key juncture in DLT solution development and adoption, making it an imminent opportunity to transform operating models even in present time horizons. Specifically, we consider its application to the post-trade settlement process to be the next trend.

- **Blockchain technologies in the US repo (repurchase agreement) market**. With the US Office of the Comptroller of the Currency (OCC) providing the greenlight to use stablecoins as payment and participate in independent node verification networks, financial institutions are extensively exploring leveraging blockchain technology to provide, speed, security, and cost-savings to their clients. For example, JP Morgan has created a digital currency, JPM Coin, to transact repo market trades with their bank and broker-dealer counterparts . The digital currency leverages blockchain technology and smart contracts which allow cash and treasuries to be returned with minimal cost, risk, and instant execution, gaining interest from competitors such as Goldman Sachs.

The features of blockchain that make it such a valuable technology for post-trade settlement are: 1) a single truth layer of traded data for banks; 2) automatable processes; 3) oracles (secure data feeds into smart contracts from internal and external sources); and 4) signatures showing agreement. While we won't go into these elements in this paper, what is important to understand is that these elements are what make possible instant payment and delivery verification, automatic settlement, and single source of truth records.

- **Blockchain technologies in the equities market**. Beyond instant settlement of cash and treasury transactions, blockchain can also be leveraged for equity and commodity settlement as well, offering benefits in liquidity and credit risk (particularly principal risk) management. The latest development in this space comes in the shape of Bank of America's partnership with Paxos Trust Co, joining Paxos' pilot network to facilitate settlement of equity trades in minutes rather than days.

Blockchain may be the next best solution for the 'age-old' operational challenge of reducing the T+2 settlement timeline to T+0. While current applications of blockchain are limited, as interoperability with current capital markets infrastructure remains a challenge, through the sophistication of blockchain technology, we expect to see its benefit of speed and efficiency to unlock new growth potential for the industry long-term, exponentially favoring early adopters.

CONCLUSION

As highlighted in the previous sections, capital markets firms must combine their deep subject-matter expertise and digital orchestration (ability to utilize a firm's resources across disciplines) to realize value through digital capabilities. In fact, the process of creating and deploying a new digital tool/capability is quite different from creating new financial products. Financial institutions must have the capacity to apply design thinking, agile, product-focused ways of working to ensure customer-centric design, innovation, and rapid delivery. To begin the journey to implementing a digital ecosystem, financial institutions should consider the following questions:

1. **What is the vision?** Confirm the long-term digital goals and evaluate the multi-year vision for improving your capabilities inside. Only after clarifying the vision, can firms consider some of the harder-hitting strategic decisions.

2. **What are the right digital capabilities?** Identify the core value-add business areas that should be optimized and assess the capability landscape to identify what technology should be implemented where.

3. **What is the target operating model?** Assess how digital applications will communicate to streamline day-to-day tasks such as onboarding, data access, trade processing, and regulatory compliance.

4. **Who are the right partners?** Leverage the current market of innovative vendors to curate partner networks to accelerate delivery.

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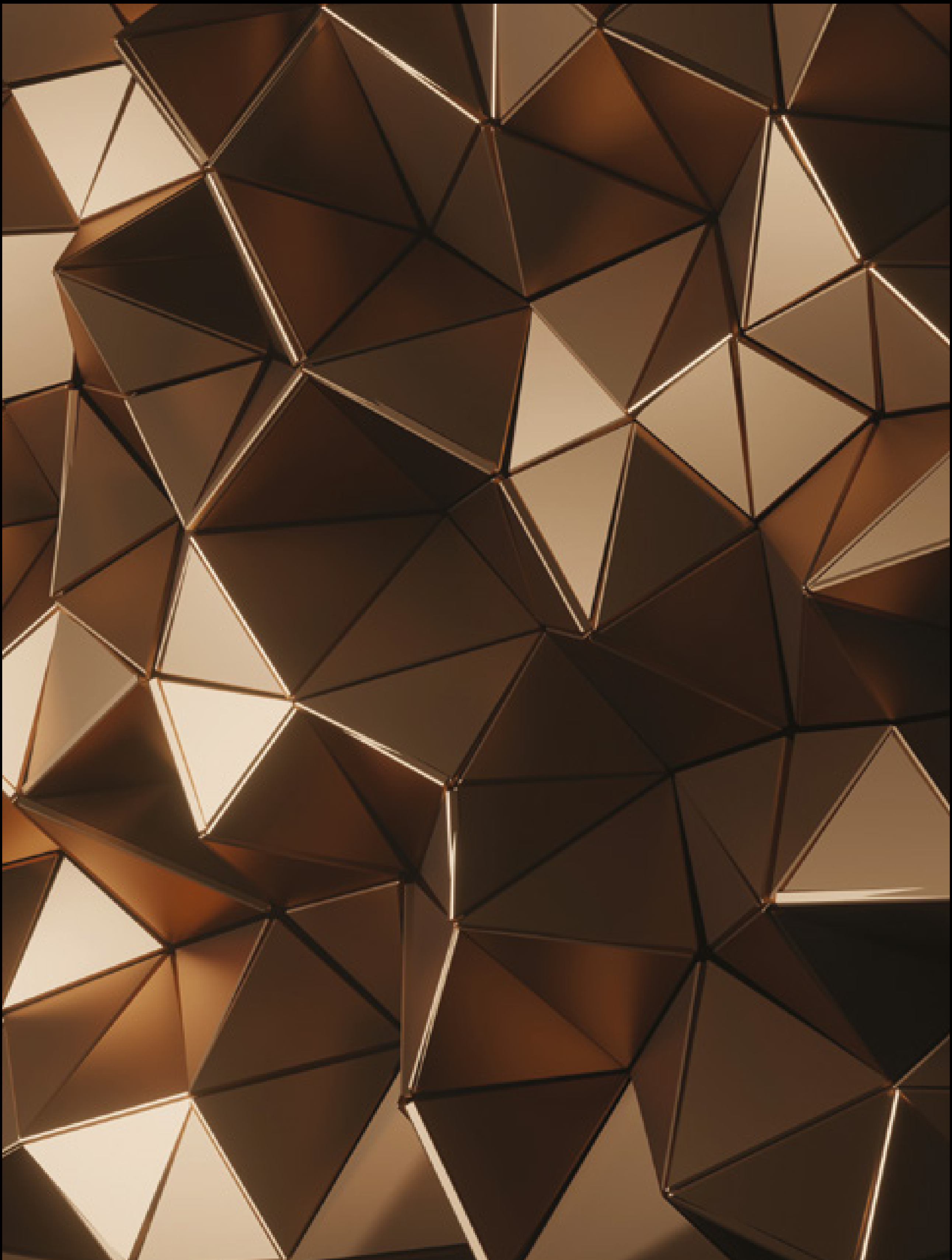

MULTI-CLOUD: THE WHY, WHAT AND HOW OF PRIVATE-PUBLIC CLOUD SETUPS AND BEST PRACTICE MONITORING

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INTRODUCTION

Banking, as any business, is complex, and there are many choices and decisions to be made – all the time. Underlying many businesses today is expensive technology which adds to the endless decision complexity. When mapping their IT strategy, companies need to evaluate opportunities and challenges presented by cloud technology, and many businesses find themselves with a mixed private and public cloud setup. This whitepaper explores important issues with multi-cloud scenarios, with a focus on the monitoring of multi-cloud solutions.

“

Many companies are running workloads, applications, and systems in a distributed landscape with a combination of public cloud providers, private clouds and legacy infrastructure. Without the right solution, the monitoring of all these environments can become a useless overhead in the best case and a danger to the business in the worst.

”

WHY DO COMPANIES ARRIVE AT MULTI-CLOUD SCENARIOS?

The uptake of cloud technology by large, high-profile global companies, its popularity within IT departments, its promise of 'almost free' (or at least low cost) and the rise of cloud-based solutions have predictably forced companies to scrutinize and reconsider their traditional legacy systems and setups.

Every significant company must develop a cloud strategy defining if and how they should move their existing setup to the cloud. They will likely start the transformation process implementing a private cloud solution on on-premises infrastructure to achieve a scalable and more manageable system.

However, as business activities expand, it becomes inevitable that the need for more computing resources or external software services grows to the point where the company faces a dilemma – expand the private cloud resources or acquire resources and services from a public cloud provider. Companies must consider compelling arguments linked to the benefits of public cloud use. Once a company starts to utilize a public cloud provider, the result is a hybrid-cloud solution, a combination of private and public cloud services. A complete cut-over to public cloud is rarely possible as some IT infrastructure usually needs to remain on-site or in a private environment.

There are many benefits of using a public cloud, like the flexibility in deploying new environments within minutes or quick reaction to peak workloads, to name just a couple. This results in better employee experience and efficiency. The quicker you can deploy and scale the quicker people can get to projects using cloud. Public cloud providers offer solutions that enable quick business transformation journeys and faster go-to-market requirements.

Computing resources have become a commodity. Businesses are aware of the fact that they cannot differentiate solely based on technological maturity linked to the usage of their infrastructure. Public cloud providers are generating and offering more and more new cloud based and cloud native services that reinforce technological innovations and modernization. Adopting these companies' services brings additional value to businesses.

Public cloud providers have also already addressed many regulatory and legal requirements and continue to do so. This is paving the way for a broader adoption of cloud services – increasingly also in highly regulated industries.

Driven by these very compelling arguments many companies will chose to expand their private cloud infrastructure with public cloud offerings. This results in an ever-increasing number of multi-cloud setups.

MULTI-CLOUD COMBINES THE BEST OF BOTH WORLDS

THE SCENARIO DESCRIBED ABOVE RESULTS IN THE USE OF MULTI-CLOUD SOLUTIONS AS THERE ARE COMPELLING ARGUMENTS AND REGULATORY RESTRICTIONS TO RETAIN SOME OF THE APPLICATION LANDSCAPE IN A PRIVATE CLOUD INFRASTRUCTURE.

Private cloud:

- **Security aspects, regulatory and legal requirements**: Certain systems and data registers may not be placed into a public cloud environment. Possible reasons are constraints regarding geographical placement and the required physical access (e.g. emergency infrastructure, co-location requirements, bandwidth, data restrictions).

- **Financial aspects**: For example, the hardware that is already owned and still not depreciated (and software if it cannot be reused) can be used for running a private cloud design.

- **Services or functionalities**: Some services cannot be provided by a public cloud provider or are uneconomical to adapt for a public cloud scenario (e.g. legacy and custom built applications).

Public cloud:

- **Scalability**: Complete flexibility to react to resource needs instantly without requiring oversized hardware for everyday business.

- **Dynamic creation of environments**: Development and test activities benefit from unrestricted and automated creation and destruction of environments on demand.

- **Innovative services**: Bringing in and leveraging innovative, external cloud-based services is easy.

- **Evaluation and proof of concept** (**POC**): Evaluation of products in cloud setups is very easy and can usually be done without financial commitments outlasting the duration of a POC.

These examples show why a multi-cloud solution is often used, as it is necessary for companies for compliance reasons and they can also get the best of both worlds. However, even though a multi-cloud solution can bring considerable benefits for a company, it also brings inherent risks, specifically with monitoring.

CURRENT AND TARGET STATE OF MULTI-CLOUD MONITORING: Q&A ON THE MOST IMPORTANT ASPECTS

HOW DO CUSTOMERS CURRENTLY MANAGE THEIR MULTI-CLOUD ENVIRONMENTS?

What is still left in their legacy infrastructure management landscape?

On the one hand, public cloud providers offer dedicated monitoring solutions like AWS CloudWatch, Azure Monitor or GCP's operations suite. Monitoring of legacy infrastructure and private cloud domains, on the other hand, is dominated by on-premises hosted products such as Zabbix, Nagios or Dynatrace. Both options are usually combined with third party cloud and local services used for application monitoring. The use of distinct and isolated monitoring solutions however, comes with operational risks and difficulties linked to the management of multi-cloud workloads.

WHAT ARE THE CURRENT CHALLENGES WITH MULTI-CLOUD MANAGEMENT AND THEIR EFFECT ON RESOURCE USAGE?

The challenges related to monitoring multi-cloud solutions include **operational factors** such as:

- The support and operations teams must manage multiple monitoring platforms – this has a direct impact on resource utilization.

- Non-standardized monitoring frameworks result in different monitoring specifics. When used in parallel, the different metrics and threshold levels lead to confusion and loss of control. This can result in non-compliance with Service Level Agreements (SLAs).

- Building a central event management system, an IT Service Management (ITSM), with ticketing or emailing and multiple monitoring solutions linked to it using webhooks creates complex integration overhead.

- The lack of a centralized visualization interface results in an increased need of resources.

- The lack of dependency links between the different monitoring solutions obstructs a holistic view. A raised alarm is followed by complicated and time-consuming processes of incident troubleshooting and problem root-cause identification. It is expensive and prone to missing out important factors that may significantly contribute to the issue's origination.

- The lack of dependency information can lead to wrong decisions by operations engineers because a metric or an alarm cannot be put into the context and thus loses meaning. The consequence is an increased risk of service unavailability with the potential of system-wide crashes.

- Meeting end-to-end business and customer SLAs becomes more challenging as the dependencies between systems monitored by different solutions are not taken into account.

Even though this is just a short non-exhaustive list of challenges, they need to be addressed.

WHAT SHOULD BE THE TARGET STATE OF MULTI-CLOUD MONITORING?

How does this effectively support customers on their journey (innovation, transformation, digitalization) with a hybrid cloud solution?

An ideal and solid multi-cloud monitoring system needs to have attributes of high availability and centralization. A quick win might be to choose a Monitoring-as-a-Service (MaaS) solution where a predefined, preconfigured, and scalable monitoring service is hosted in a public cloud. Solutions from all major monitoring providers can be found as instantly deployable services within public cloud providers' marketplace sections.

Another solution consists of creating and managing your own centralized monitoring system installation where either your local infrastructure or private/public cloud hosted infrastructure stack supports performance monitoring of infrastructure and application layers. Additional attributes include a fully customizable visualization interface and flawless compatibility with mobile platforms as a must. Finally, a wide support of API and webhook connectivity options towards mostly used and popular ITSM tools is an important attribute to facilitate an effective alert/event management.

CURRENT AND TARGET STATE OF MULTI-CLOUD MONITORING: Q&A ON THE MOST IMPORTANT ASPECTS

CONTINUED

The decision to choose between MaaS or own installation of monitoring solution should follow the standard cloud service adoption approach and analysis. It should consider factors already mentioned: regulatory requirements, company's infrastructure standards, availability, capacity of internal computing, human resources, willingness to invest and modernize, number of monitored services as well as employee skillset and prior experience linked to legacy monitoring solutions.

WHAT IS A TYPICAL APPROACH OF IMPLEMENTING A MULTI-CLOUD MONITORING SOLUTION?

The generic approach of implementing a new multi-cloud monitoring solution should contain the following steps and milestones:

- Identify the pain points and missing information that would protect the business.
- Together with relevant business units determine what needs to be monitored. Outline how they benefit.
- Select a suitable monitoring solution based on requirements.
- Set up an implementation strategy – MaaS or own installation.
- List metrics, key performance indicators (KPIs) to monitor and events to log.
- Develop an incremental implementation strategy based on criticality and value.
- Deploy the solution for a trial run and setup alerts for high priority events and metrics. Establish and test connections to external tools used as part of the ITSM and initiate business reporting.
- Check the functionality and reliability of the new monitoring system in a redundant setup of the 'old' and the newly deployed solution. Confirm that the new solution is reporting events correctly.
- Complete the setup of metrics monitoring and event logging.
- Control the metrics for accuracy and tune thresholds to the desired targets.
- Decommission legacy monitoring systems.

HOW TO CHOOSE THE RIGHT MULTI-CLOUD SOLUTION?

There are many solutions on the market, and it is difficult to make the right choice. During the selection process, you should consider the following questions:

- What type of monitoring are we seeking?
  The most common types are network and security, infrastructure availability and capacity, application performance and availability, web performance and user interaction monitoring, business performance metrics (e.g., the number of processed documents, transactions, sales results, etc.).
- What is the preferred management technology and required information granularity?
  - Agent monitoring – typically designed for a specific platform and vendor, can collect more detailed information.
  - Agentless monitoring – uses standardized protocols and log analysis. In general, ready-to-deploy solutions are hosted in private/public clouds and usually have great built-in agentless monitoring possibilities.
- How many devices and applications are to be monitored?
- What is the company's licensing strategy? Would it rather invest, rent, or use an open-source solution, potentially contributing own development to implement specific functionalities?
- How likely is the IT landscape to grow and will the scope for monitoring need to be extended? Is the candidate solution flexible enough to support the growth strategy?

CURRENT AND TARGET STATE OF MULTI-CLOUD MONITORING: Q&A ON THE MOST IMPORTANT ASPECTS

CONTINUED

WHAT IS THE RIGHT ADOPTION AND IMPLEMENTATION STRATEGY?

Regarding the adoption and implementation strategy, it is important to also consider some factors that are in favour of a MaaS solution. Generally, product licensing is already included in the operational costs, so there is no need to procure additional software licenses. Ready to use tools can be deployed instantly and provide flexibility in terms of features testing and creation of POCs.

Additionally, MaaS providers offer support 24/7. SaaS solutions allow more time to focus on business demands rather than worrying about the effort needed for monitoring maintenance and reliability, as well as offering the quick adoption of new services, components, and assets into the monitoring solution.

HOW TO ESTABLISH QUICK WINS?

By selecting and implementing a suitable multi-cloud monitoring solution, one of the earliest benefits a company can profit from is the possibility to review and manage the system utilization patterns. This allows for optimal resource allocation and manging the running costs effectively. The resulting increased availability of services, greater performance and cost transparency, as well as reduced critical incidents will improve business experience and strengthen relationships between IT operations and business.

IF A BUSINESS RUNS A CORRECTLY AND PURPOSEFULLY SET-UP MULTI-CLOUD MONITORING SOLUTION, IT WILL PROVIDE ADDITIONAL AND SIGNIFICANT BENEFITS TO DIFFERENT BUSINESS AREAS:

FinOps:
Unmanaged utilization and deployment of new services using public providers can become very expensive. Monitoring is necessary to avoid cloud cost leaks.

SecOps:
Early alerting and effective response to security threats results in decreased costs linked to security issues. This will improve the security of applications and network layers in the long run.

CloudOps:
Simple and effective scaling when needed, either manually or automatically, using resource scaling scripts triggered by events, optimizes service availability and ensures positive end-user experience.

DevOps:
Embedding monitoring into the early stages of the DevOps cycle helps DevOps engineers to identify and fix issues at a much earlier stage. That way they can achieve and maintain optimal application performance.

CONCLUSION

Many companies are running workloads, applications, and systems in a distributed landscape with a combination of public cloud providers, private clouds and legacy on premises infrastructure. Without the right solution, the monitoring of all these environments can become a useless overhead in the best case and a danger to the business in the worst.

Therefore, we regard a multi-cloud monitoring solution as an important infrastructure item in this scenario. Implementing multi-cloud monitoring will require investment, but it is a crucial step towards operating a stable business and achieving lower total costs.

Monitoring systems are 'behind the scenes' technology and are often only thought of when systems fail. Subsequently, getting investment and interest from the business can be challenging.

However, all business stakeholders need to be involved in the discussions about monitoring solutions, so that their needs and requirements are understood and considered. That way they can also appreciate the value monitoring brings for them and how it facilitates effective growth and profitability for the overall business.

THE FUTURE OF INSURANCE: PERSONALIZED, DIGITALIZED & CONNECTED

CAPCO GLOBAL INSURANCE SURVEY 2021

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INTRODUCTION

Individuals, companies, industries, and governments globally are currently confronting many changes, some of which look set to alter the nature and tenor of our daily lives in fundamental ways. COVID-19, in particular, has clearly been profoundly disruptive, and the reshaped landscape of the post-pandemic world has yet to fully reveal itself. However, at a time when our physical proximity and interactions have been significantly curtailed, new opportunities and avenues to connect and build relationships continue emerging via technological innovation and digitalization.

New realities in insurance are coming to the fore as part of this evolutionary shift that will benefit service providers and consumers alike. Our survey of 13 key global markets captures a diverse range of today's consumer sentiments, alongside the key trends, challenges, and opportunities that will shape the industry tomorrow.

Many of the world's insurance markets are growing beyond the bounds of what was thought possible just 10 years ago. Large, traditional market players are coexisting and even partnering with new entrants, including niche insurtechs and other companies whose original business focus is far removed from the insurance world.

Innovation is everywhere. Robots are competing with your trusted insurance broker or agent to serve complex customer needs. Insurers are integrating environmental, social and governance (ESG) factors within their core business operations, as part of underwriting, investing and risk management decisions, and developing tailored ESG products and services.

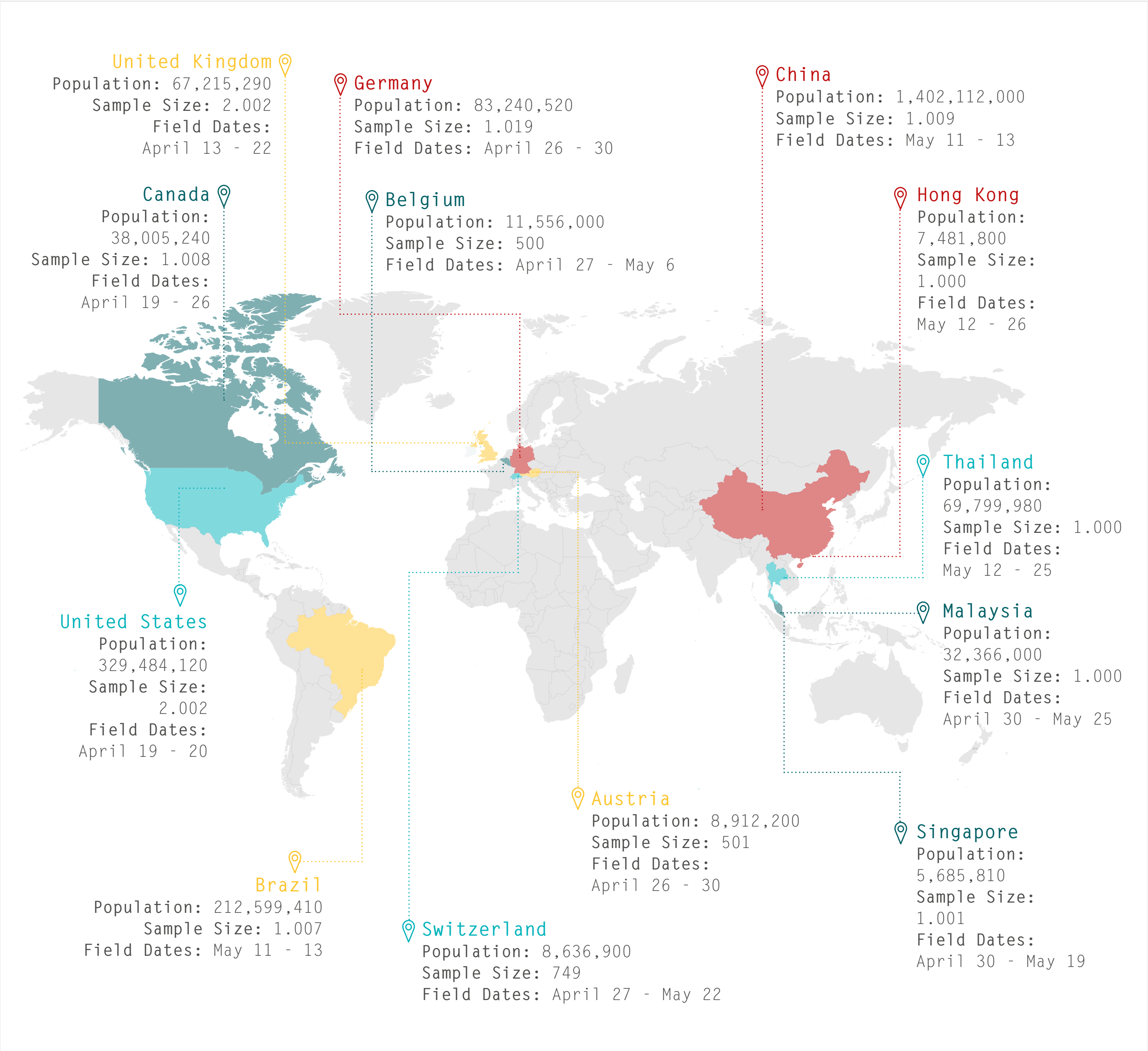
If our survey highlights that there is no one-size-fits-all customer – and therefore no one-size-fits-all solution in the future of insurance – our data does confirm the future will be personalized, digitalized, and connected.

METHODOLOGY

Our survey was conducted online between April and May 2021 and collected responses from a total of 13,798 individuals.

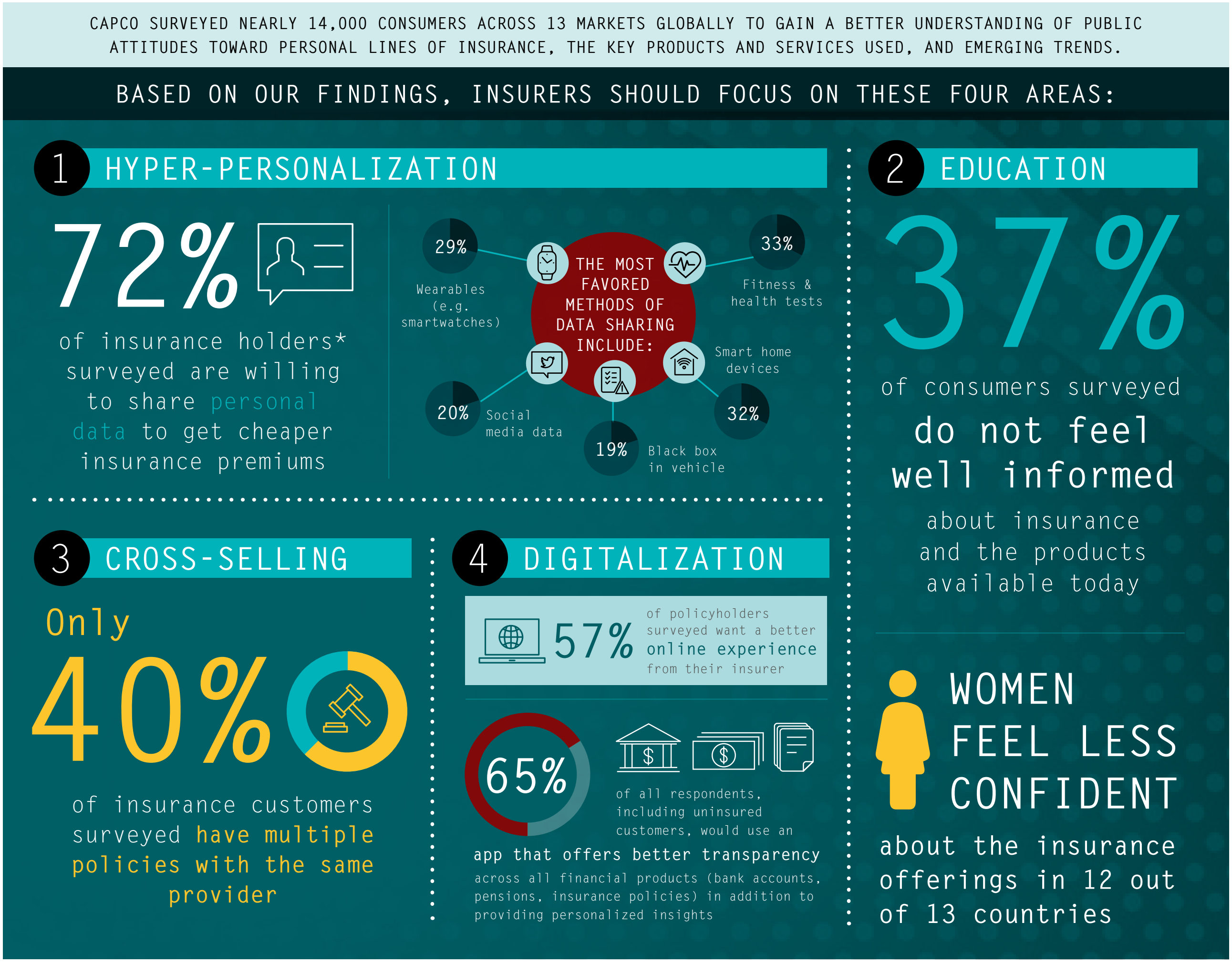
The markets surveyed were the UK, US, Canada, Brazil, Germany, Austria, Switzerland, Belgium, Hong Kong, China, Singapore, Thailand, and Malaysia. Country representative quotas were followed.

Survey respondents were drawn from six age demographics: 18-24, 25-34, 35-44, 45-54, 55-64, and 65+. 49% of respondents identified as male, 50% identified as female, and 1% identified as other.



Source: data.worldbank.org

EXECUTIVE SUMMARY



*i.e. insurance holders this year and last year.

EXECUTIVE SUMMARY CONTINUED

FOUR OPPORTUNITIES FOR INSURERS

1 **EDUCATION**

Education is needed to increase consumer knowledge and engagement

2 **HYPER-PERSONALIZATION**

Hyper-personalization could drive better customer outcomes for certain demographics

3 **CROSS-SELLING**

Insurers can boost brand awareness, repeat business and retention through cross-selling

4 **DIGITALIZATION**

There is the demand for more sophisticated online services and tools

"Our global survey findings reveal that trust in the insurance industry is strong, despite the claims and servicing challenges posed by the COVID-19 pandemic. The way many firms have quickly responded and adapted to customers' needs in these most trying of times will prove valuable as insurers look to deepen existing relationships and broaden consumer engagement more generally.

It is certainly a positive that 63% of survey respondents consider themselves to be well informed about the range of insurance products available today. However, our research shows there remains a clear opportunity to drive a further uplift both in regards to the levels of financial education and the transparency of policies. Knowledge is power and leads to heightened confidence, more tailored protection and a greater appetite among consumers to explore additional insurance options.

That sort of empowerment dovetails with the fact that the majority of respondents also want more digitalized, personalized, and connected customer experiences. From a consumer's perspective, it is too easy for financial services products – past the point of initial engagement or need – to feel separate or disconnected from everyday life. Yet, despite sometimes feeling like a safeguard for tomorrow's problems, insurance is in reality offering protection for the here and now. Technological innovation and digitalization present insurers with the tools to make this truth more tangible, to the benefit of both sides in terms of the depth, breadth, and relevance of cover."

Matthew Hutchins
Global Insurance Lead, Capco

GLOBAL OVERVIEW: THEMES & TRENDS

TOP 10 INSURANCE POLICIES PURCHASED

We asked our survey respondents which insurance policies they had bought in the last year.

Auto, health, and life were the most common insurance policies owned. It should be noted of course that in certain European and APAC markets, certain forms of insurance, such as health, are mandatory. Auto had particularly high ownership in the Americas, while health and life policies were most prevalent in APAC.

Personal property insurance came in fourth place, with high ownership in the UK, Belgium, and Canada.

Despite COVID-19 lockdowns and travel restrictions around the world, which saw global travel and tourism revenues plummet by nearly 60% year on year,[1] travel/holiday insurance came in at fifth place, in joint position with mobile phone/gadget insurance – a product truly born of the digital age. UK respondents in particular were big spenders in both categories.

Long-term savings products were particularly popular with APAC and Belgium-based respondents.

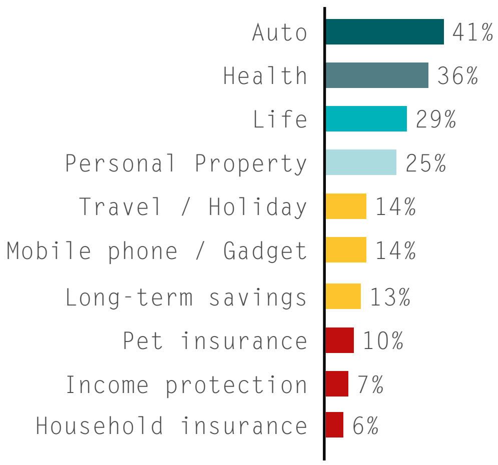
UK and Hong Kong respondents were the biggest buyers of pet insurance. The pet care market in APAC is expected to see a 10% compound annual growth rate to reach US$132 billion in 2027,[2] and in the UK, pet insurance offers providers a potential £2.5 billion opportunity in untapped premiums, due to an estimated 48% of dogs and 69% of cats remaining uninsured.[3]

Thailand and Hong Kong respondents were the biggest buyers of income protection insurance. In June 2020, a survey by the Asia Foundation estimated that 70% of Thailand's workforce had seen their monthly income fall by an average of 47%.[4] Hong Kong's economy also suffered greatly in 2020, with GDP shrinking to a record 6.1%.[5]

Austria, Switzerland, and Germany were the biggest buyers of household insurance.

(For the purposes of simplicity, Health included: medical insurance, health insurance through employer, disability insurance, critical illness insurance, or similar. Life insurance products included: Life & savings insurance, term, whole, universal life products.)

TOP 10 INSURANCE POLICIES PURCHASED IN THE PAST YEAR



n: 13,798

GLOBAL OVERVIEW: THEMES & TRENDS CONTINUED

CLAIMS

Claims play a critical part in a customer's experience and interaction with their provider. A claim can strengthen an individual's relationship with the insurer, potentially extending it for many years and driving recommendations to family and friends; or, if poorly handled, it can trigger a swift move to another provider.

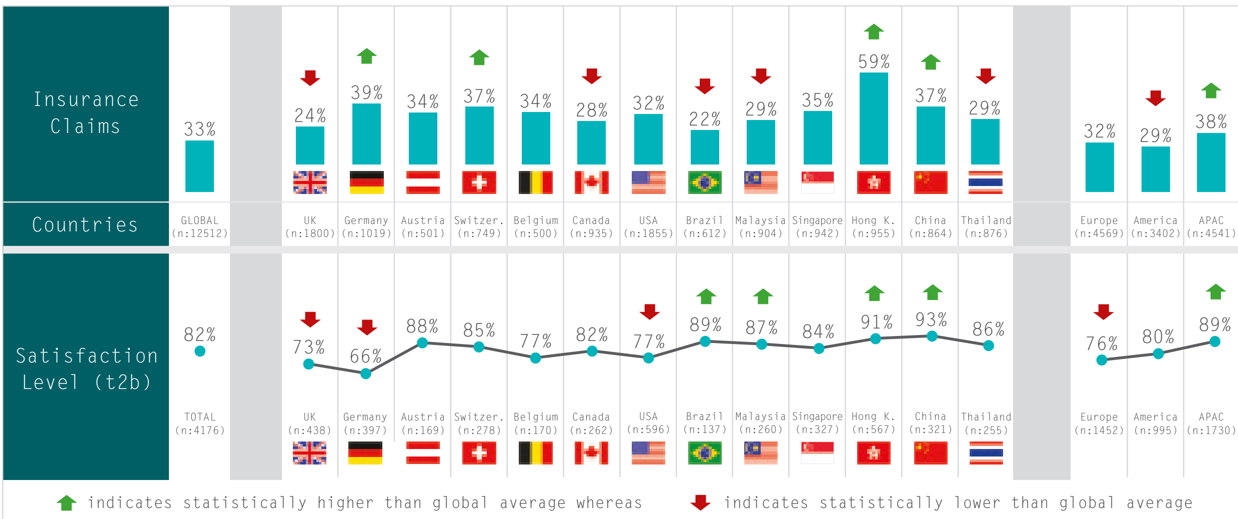
As seen in Table 1, our survey identifies health, auto, and life insurance as the most claimed insurance products over the past two years across our respondents globally. Interestingly, Gen Y (25-34) were the biggest health claimants (43%), whereas second-generation Baby Boomers (55-64) submitted the most auto claims (49%). Older Baby Boomers (65+) made the most personal property insurance claims (31%) and Xennials (35-44) made the most life insurance claims (33%).

The acceleration in digitalization and smartphone use (48% of the world own one[6]) has catapulted mobile/gadget from being a relatively niche form of insurance into the survey's fourth most claimed product (and fifth most popular insurance). The leading claimants are respondents from Germany (30%) and Brazil (28%), and perhaps predictably, digital native generations – Gen Z (18-24) and Gen Y Millennials (45%) – who are also the leading purchasers of mobile/gadget insurance. Pet insurance similarly features prominently, both as a purchased and claimed-for product. Like mobile/gadget insurance, it is most favored by younger generations (13% of Gen Z, 11% of Gen Y, 10% of Xennials). The younger generations also made the most claims on this type of insurance (22% of Gen Z claimed on their pet insurance). The level of claims was higher in the UK (24%) than in other markets: as mentioned in the previous chapter, the pet insurance market in the UK is long-established. 45% of UK

FIGURE 1: RESPONSES TO "HAVE YOU MADE AN INSURANCE CLAIM IN THE PAST TWO YEARS?" AND "HOW SATISFIED WERE YOU WITH THE CLAIMS PROCESS?"

Respondents are still experiencing age-old claims issues

Despite generally high satisfaction with the claims process across the markets surveyed, consumers complain about insurance response times and too much paperwork.



GLOBAL OVERVIEW: THEMES & TRENDS CONTINUED

residents are pet owners (with over 3 million getting a pet since the pandemic struck[7]), and UK pet insurance claims have almost doubled in the past six years, from £452 million in 2012 to £815 million in 2019, with the average claim totaling £793.[8]

Our respondents were generally positive about recent claims experiences, but there is evidently room for improvement. The most satisfied region was APAC, with all countries surveyed registering satisfaction levels in excess of 80%. As many as 93% of China-based respondents selected either 'highly satisfied' or 'satisfied' in response to our question about their last claims experience. The least satisfied region was Europe, with 66% of German respondents selecting either 'highly satisfied' or 'satisfied'; 30% rated their experience as 'neutral' and 4% were 'highly unsatisfied' or 'unsatisfied.'

Looking at the reasons for dissatisfaction with a claim, three of the top five cited touch upon elements that could be supported by technology (see Table 2). Innovations, such as machine learning and AI, are improving the customer experience via digital claims handling capability, speeding up tasks, and reducing fraud and forms of data leakage. Blockchain is also starting to be used for managing claims as part of Know Your Customer (KYC) assessments and automated claims submission and processing.

From a customer perspective, the issues cited by respondents reinforce the importance of both financial literacy and simplification when it comes to insurance. The digital era has eroded customers' willingness to engage in deep reading, meaning they are less disposed to thoroughly check through paperwork. It has also changed expectations on how quickly key information can be accessed and claims issues solved.

TABLE 1

TOP 10 TYPES OF INSURANCE CLAIMS SUBMITTED IN THE PAST TWO YEARS	%
Health (e.g. Medical insurance, Health insurance through employer, Disability insurance, Critical illness insurance, or similar)	34%
Auto	32%
Life (e.g. Life & savings insurance, Term, Whole, Universal life products)	19%
Mobile/gadget	17%
Personal property	16%
Travel/holiday	15%
Long-term savings	13%
Pet insurance	12%
Income protection (e.g. Credit)	10%
Household	6%

GLOBAL OVERVIEW: THEMES & TRENDS CONTINUED

The events of 2020, which led to exceptionally hefty claims, have demonstrated the capacity of 'black swan' occurrences – such as COVID-19 – and more predictable developments (like climate change) to expose the often complex and cumbersome nature of claims processes. While we do not know the full cost of the pandemic, some data can shed light on the magnitude of its effect. Lloyds of London priced industry costs from 2020 at £6.2 billion,[9] making it the market's most expensive year for three centuries. Similarly, Swiss Re quantified the natural and man-made catastrophes from 2020 at $89 billion, naming it the fifth costliest year for insurers since 1970.[10] 2021 is similarly already looking like an expensive year for insurers.

However, there is a clear opportunity for additional innovation to enhance the claims process. Customer pain points can also be reduced by keeping them informed at every stage of their claim. This is not just a case of creating digital products, but ensuring help and support is provided in a number of different forms to support all consumer needs throughout the policy term.

TABLE 2

TOP FIVE ISSUES ENCOUNTERED DURING CLAIMS PROCESS	%	TOP ISSUES BY GENERATION SURVEYED
Slow to respond to process	42%	Gen Y Millennials (25-34), Gen X (45-54), Xennials (35-44), Baby Boomers (65+)
Too much paperwork to complete process	28%	Gen Z (18-24)
Slow to payout	27%	
No payout	24%	Baby Boomers (55-64)
Insurance premium rose significantly after claiming	24%	

GLOBAL OVERVIEW: THEMES & TRENDS CONTINUED

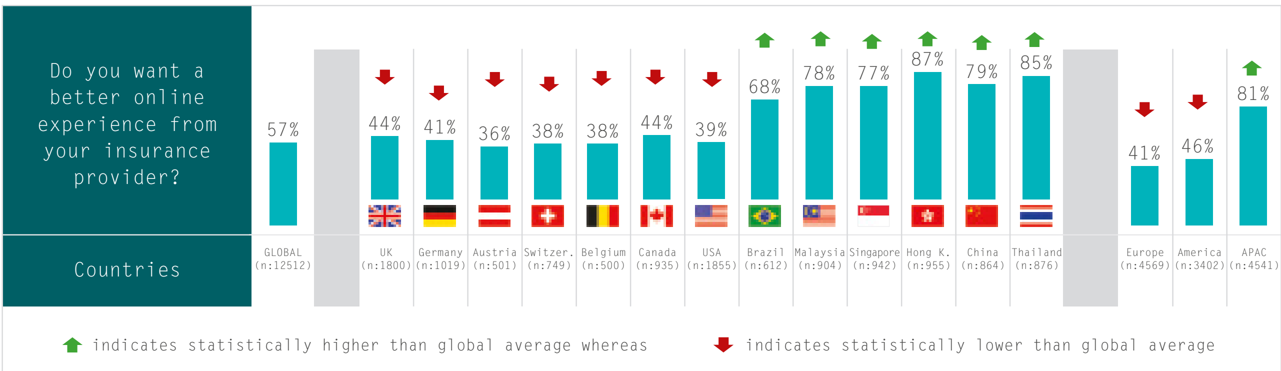
DIGITALIZATION

While in the past insurance was considered to be less digitally advanced than some industries, the accelerating digitalization of daily experiences and activities, coupled more recently with the COVID-19 pandemic, has challenged convention and is increasingly driving customer journeys down digital paths. For example, Lemonade Inc., a US and Europe-serving insurtech, tells its website visitors to 'forget everything you know about insurance' and 'get insured in seconds'.[11] 'Insurance, but simple,' says European digital insurer WeFox. Tesla urges consumers to 'get a quote with Tesla Insurance for competitive rates in as little as one minute'.[12] Convenience and transparency have become vital in insurance, and digitalization is allowing industry players to significantly enhance both.

Globally, six out of 10 have access to the internet,[13] and according to our survey, six out of 10 people want a better online experience from their insurance provider (Figure 1). This desire was strongest in APAC markets, where respondents are also most in favor of personal data sharing and using apps. However, this does not mean face-to-face advice is going away any time soon. As shown in Table 1, our respondents indicated that they look to source insurance products from a range of sources, and that the most important decision factor when buying insurance was 'value for money' (30%) across every generation, gender, level of industry knowledge, and educational background (Table 2).

FIGURE 1: QUESTION WAS ASKED TO POLICYOWNERS

6 OUT OF 10 POLICYHOLDING RESPONDENTS WANT A BETTER ONLINE INSURANCE EXPERIENCE



GLOBAL OVERVIEW: THEMES & TRENDS CONTINUED

TABLE 1

WHERE DO YOU TYPICALLY LOOK TO FIND INSURANCE PRODUCTS? (MULTIPLE CHOICE QUESTION)	TOTAL
BASE	12443
From an insurance agent	38%
Direct from an insurer	38%
Through a price comparison or review aggregator website	32%
Through an insurance broker	24%
My bank	23%

TABLE 2

WHEN BUYING INSURANCE WHAT IS YOUR MOST IMPORTANT DECISION FACTOR?	TOTAL
BASE	12512
Value for money	30%
Ability of offer to meet your needs	19%
Trust in brand	18%
Advice	14%
Ease of doing business (e.g. application process, ability to purchase digitally and managing my policy online)	11%
Rewards/points/free gift or extra services (wellness platform, telehealth)	6%
None of the above	3%

GLOBAL OVERVIEW: THEMES & TRENDS CONTINUED

HYPER-PERSONALIZATION

Our survey reveals the potential for hyper-personalization to demonstrate value for money and product relevance to consumers, especially in a time of rising premiums and claims.

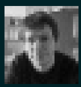
Personal data sharing is a key method to enable hyper-personalization of insurance products and services. The more widely established conduits for personal data sharing in most insurance markets today are fitness and health tests and telematics (black box technology).

Globally, 72% said they would share some form of personal data with their insurer (Table 1). However, personal data sharing can vary greatly depending on the respondent's gender, age, country, and industry knowledge-level, as well as the personal data asset in question. For example, globally we found that 75% of men surveyed would share some form of personal data, compared to 68% of women surveyed. On the other hand, in the APAC region, data sharing in exchange for a more personalized insurance product or premium was more enthusiastically embraced. In Hong Kong, for example, 92% of female respondents selected one of the personal data sharing options listed.

TABLE 1

WOULD YOU CONSIDER ONE OF THE FOLLOWING METHODS TO GET A MORE PERSONALIZED INSURANCE PRODUCT OR PREMIUM?	%
Having a fitness or health test	33%
Using a smart device in my home	32%
Wearing a smart watch or another wireless wearable technology	29%
Sharing my social media data	20%
Putting a black box in my vehicle	19%
None of the above	28%
TOTAL: 12,512 (POLICY-OWNING RESPONDENTS)	

GLOBAL OVERVIEW: THEMES & TRENDS CONTINUED



Howard Taylor, a Global Regulatory Delivery Lead based in Capco's London office and a newly appointed Commissioner at the UK Financial Inclusion Commission, notes that while there are benefits to be gleaned from the personalization of insurance products for both insurers and consumers, there are risks;

Pre-existing health conditions often mean a disadvantage when it comes to accessing a cheaper premium; this is exacerbated by an often poorly-tailored customer journey. In the UK, 3 million people with disabilities have been turned down for insurance or have been charged extra. Citizen's Advice research found that only 1 in 3 people with severe mental health problems have home insurance or a savings account.

Financial institutions need to make sure that vulnerable customers are not an afterthought but considered throughout the whole product and customer experience lifecycle. When designing and implementing a new product, firms should apply a 'vulnerability lens', assessing on a rolling basis whether their offering is accessible to all.

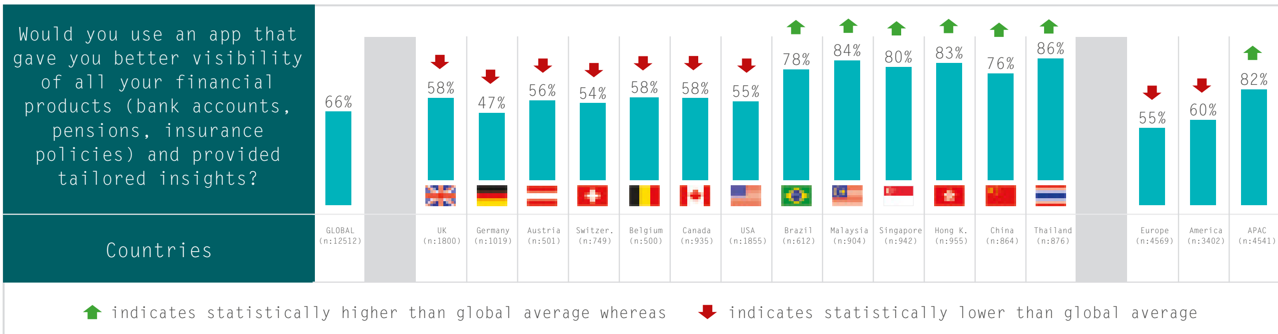
GLOBAL OVERVIEW: THEMES & TRENDS CONTINUED

Apps

There was a greater alignment of attitudes across the 13 countries surveyed when it comes to using personalized apps that provide transparency and insights into all financial products owned, such as savings, bank accounts, pensions, and insurance policies. 66% of policy-owning respondents responded in the affirmative – although just 8% answered 'I already use one,' highlighting the scope of this industry opportunity in this area (Figure 1).

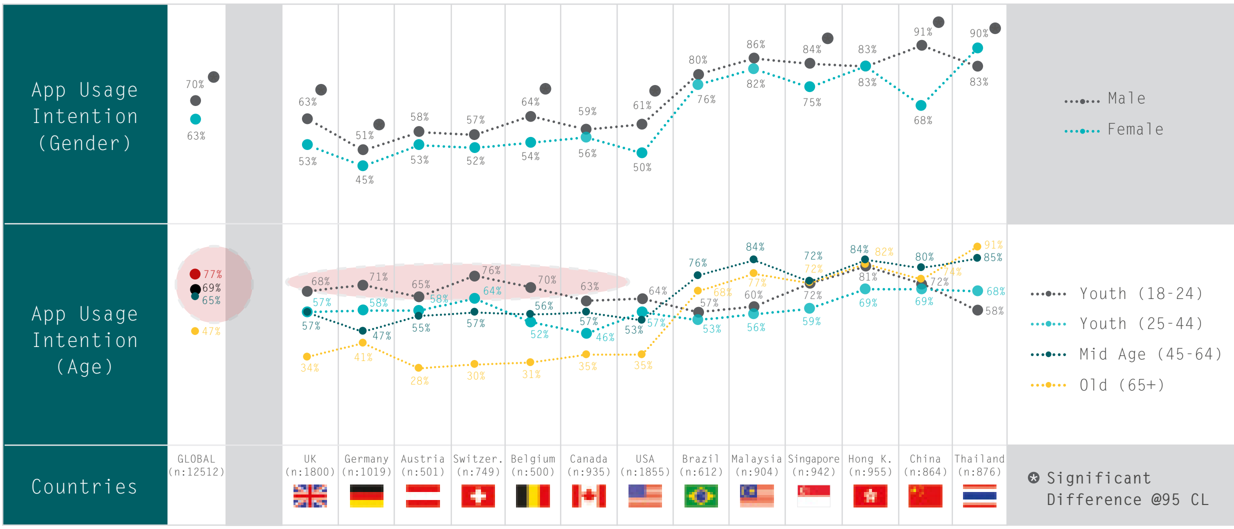
Demand for personalized apps was strongest in the APAC countries in surveyed, and typically amongst those that were male-identifying; and among respondents based in Europe and the Americas, the young. Conversely, older generations of policyholder in APAC were keener on such apps than their juniors (Figure 2).

FIGURE 1: QUESTION ASKED TO POLICYHOLDERS.
THESE RESPONDENTS ANSWERED IN THE AFFIRMATIVE.



GLOBAL OVERVIEW: THEMES & TRENDS CONTINUED

FIGURE 2: RESPONSES TO "WOULD YOU USE AN APP THAT GAVE YOU BETTER VISIBILITY OF ALL YOUR FINANCIAL PRODUCTS (BANK ACCOUNTS, PENSIONS, INSURANCE POLICIES) AND PROVIDED PERSONALIZED INSIGHTS?"



Matthew Hutchins, Capco Partner and Global Insurance Lead, says:

"The data from our survey shows that respondents want a more connected customer experience that goes beyond the insurance space into other areas of financial services. Insurers can achieve this by developing digitally focused tools that educate the customer, provide personalized support and financial information.

Different customer segments have different needs and preferences when it comes to the sharing of personal data, however. Insurers could devise 'two-way contracts' to better understand the extent of customer willingness to share data in exchange for more unique usage-based products while providing reassurances regarding the privacy and fair use of data.

As the insurance industry becomes increasingly data-centric, we could see the emergence of more niche insurance offerings to cater for consumers."

GLOBAL OVERVIEW: THEMES & TRENDS CONTINUED

EDUCATION

Over a third of respondents do not feel well-informed about insurance

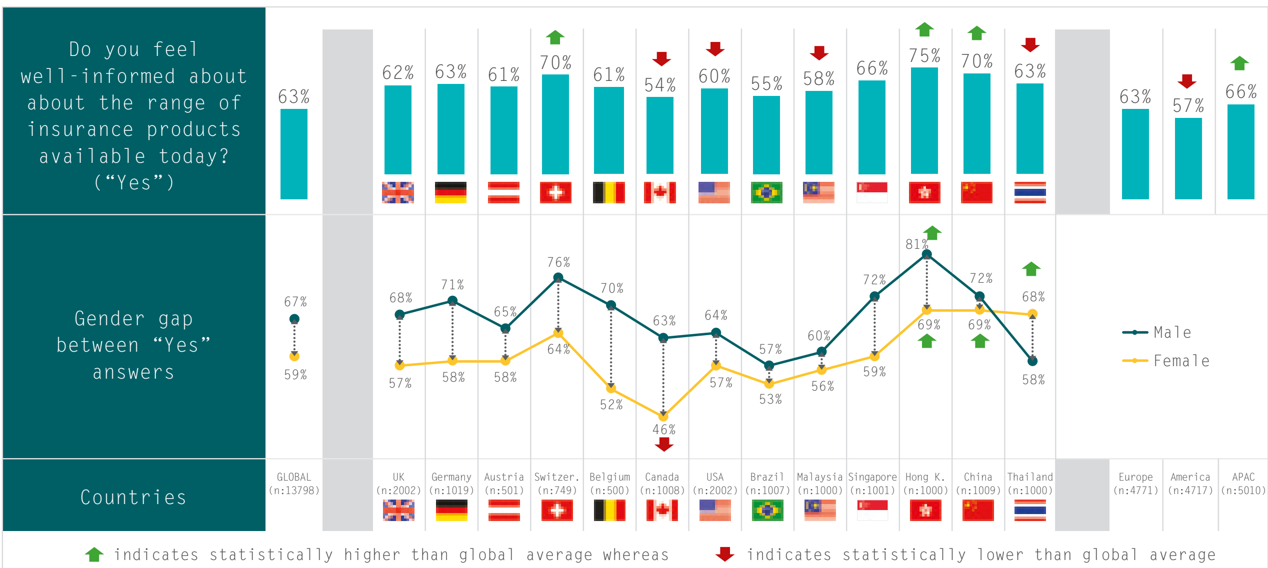
Insurance by its very nature is a complex industry. Our survey demonstrates that many people worldwide outsource their policy decision making to a professional, such as a broker (24%) or agent (38%). Others visit a price comparison website (32%) or go direct to the insurer (38%) where they only need to consider a limited range of options without a need for deeper industry knowledge. Once their payment schedule is set up, most consumers rarely think about their policy again until they encounter an issue, must make a claim, or need to renew.

Our survey found 37% of respondents do not feel well-informed about insurance and the products available today (Figure 1). This level of uncertainty is particularly pronounced among women/female identifying respondents (41%), single policy holders (42%), the 18- to 24-year-old Gen Z demographic (43%) and the uninsured (71%).

APAC respondents considered themselves the best informed, although Swiss respondents were also highly confident. In Thailand, women were more confident than men – the only country surveyed where we found this to be the case. While we believe insurers should take this gender confidence gap with a pinch of salt (studies have found that women display lower 'self-rates' and unfavorable attitudes to their ability or performance than men[14] – and studies have also found that compared with women, men are more prone to displaying optimism bias, considering themselves less threatened by the risks[15]), there is nevertheless a gap, which could be hindering women's engagement with insurance and therefore their overall insurance coverage protection. A US report by Life Happens and LIMRA in 2021 found that just 47% of women have life coverage versus 58% of men.[16] We have also heard that women's careers and finances have been disproportionately affected by the pandemic.[17]

When assessing the responses to our question "Do you feel well-informed about the range of insurance products available

FIGURE 1: QUESTION ASKED TO ALL SURVEY RESPONDENTS



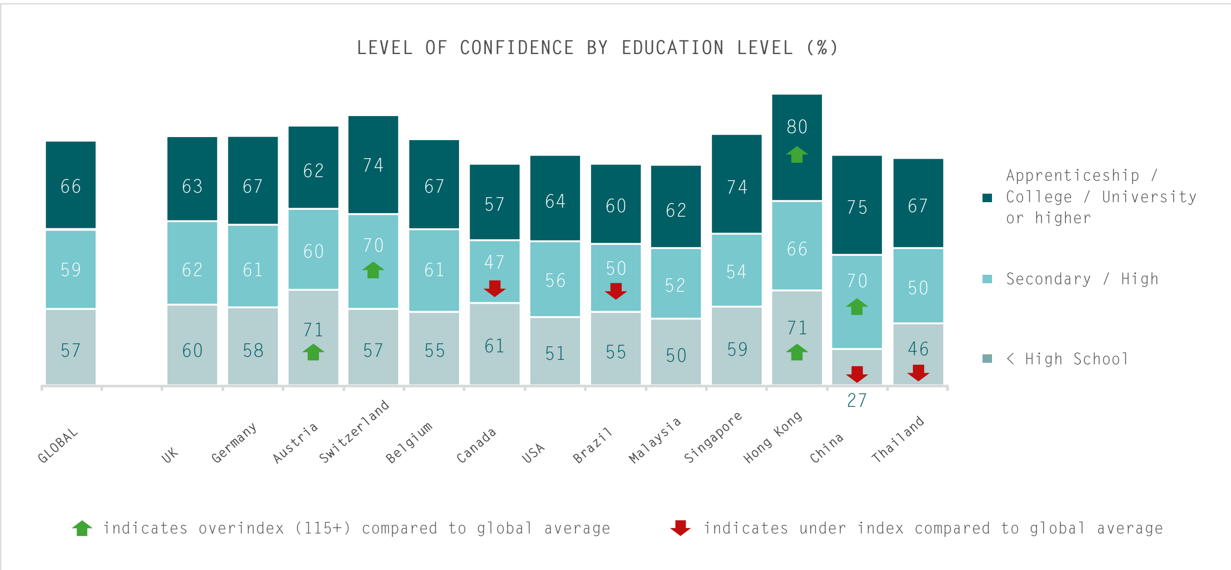
GLOBAL OVERVIEW: THEMES & TRENDS CONTINUED

today?", on the basis of education-level, self-assurance tended to be more evident among the higher-educated respondents. Two-thirds (66%) of university-educated respondents felt well-informed about the industry in comparison to 57% of high-school graduates (Figure 2).

However, 25% of those who participated in further education (apprenticeship/college/university or higher) selected 'don't know' when asked the question "As a result of COVID-19, do you feel that your existing insurance products provide the appropriate amount of protection?".

Our survey has revealed there is a big incentive for insurers to provide additional guidance around insurance policies; regardless of their country or origin, respondents who feel more confident about their knowledge level tend to buy more insurance than those who lack confidence. 74% of respondents owning four or more policies felt well-informed about the range of insurance products today, compared to 58% with a single policy. Just 29% of uninsured respondents felt well-informed.

FIGURE 2: 'YES' ANSWERS TO "DO YOU FEEL WELL-INFORMED ABOUT THE RANGE OF INSURANCE PRODUCTS AVAILABLE TODAY" QUESTION THAT WAS ASKED TO ALL SURVEYED



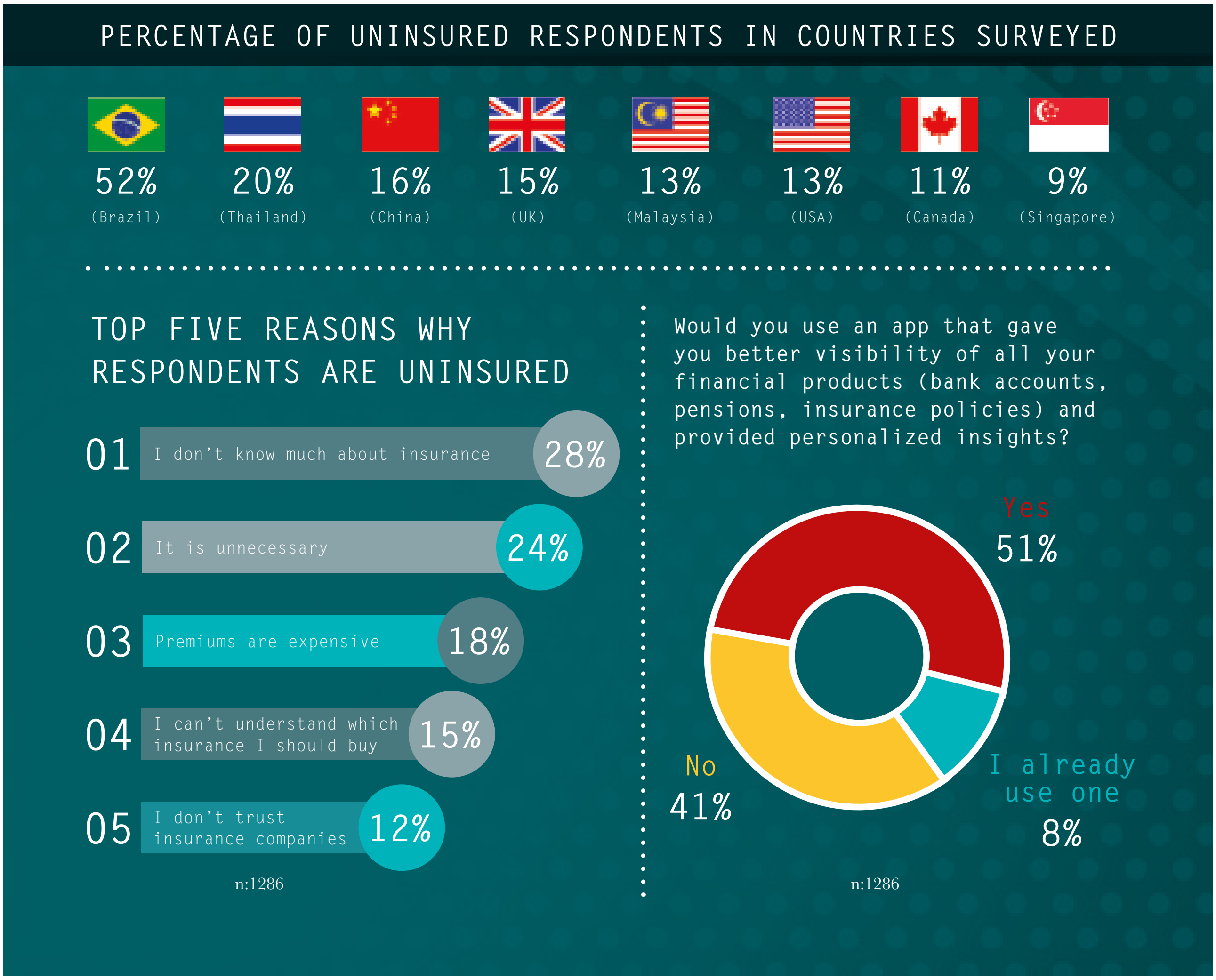
GLOBAL OVERVIEW: THEMES & TRENDS CONTINUED

THE UNINSURED

Lack of financial literacy is a key barrier to policy ownership

After answering some basic background questions, such as age, gender and education, respondents were asked whether they currently owned an insurance policy. 1,286 respondents answered in the negative. 71% of these respondents had never had an insurance policy before, and 71% answered 'no' or 'not sure' to the question "Do you feel well-informed about the range of insurance products available today?".

While cost is a significant factor in policy ownership, the results of our survey suggest that insurance education and financial literacy could shift perceptions around the value of insurance, and in turn prompt a positive reassessment of the costs involved – and hence drive increased engagement and uptake.



In Germany, Austria, Switzerland and Belgium, insurance is mandatory.

GLOBAL OVERVIEW: THEMES & TRENDS CONTINUED

PREVIOUS INSURANCE ISSUES ENCOUNTERED BY UNINSURED

SAMPLE SIZE: 1286	
The specific terms and conditions didn't fully cover my claim	25%
Insurance premium rose significantly after claiming	23%
Difficult to reach agents / call center customer representative	22%
I received less money than expected when I claimed	21%
Slow to respond and pay out	18%
Too much paperwork to complete the claims process	16%
My insurance documents never arrived	16%
My payout was refused	16%
Insurer's website or app was too complicated to use	9%
Other	7%

WHAT WOULD CONVINCE YOU TO HAVE INSURANCE?

More affordable premiums	37%
Finding a service that met my specific needs	29%
More detailed information about the benefits, terms & conditions, etc.	28%
Trust in the company and services provided	26%
More accessible services (apps, customer support via phone or internet)	22%
Receiving the policy quicker and making amendments more easily	15%
Other	4%

GLOBAL OVERVIEW: THEMES & TRENDS CONTINUED

CROSS-SELLING

Value for money and cross-selling do not always go hand-in-hand

Less than half of policyowners told us they have multiple policies with the same provider (40% globally). We also found that 22% of global respondents have multiple policies, but each with a different insurance provider. This is the segment where the cross-selling opportunity lies. However, this is easier said than done.

Insurers are faced with a number of challenges in this field:

- In times of economic crisis and uncertainty, value for money is key. This was our respondents' biggest decision factor when buying insurance today (30%).
- Furthermore, in certain markets where customer disintermediation is high, it is harder to cross-sell. In the UK, 63% of respondents looked for insurance through a price comparison or review aggregation website; and in Brazil, 46% of respondents bought insurance through their bank.
- Customers look at different products during different time horizons, and not all policies are renewed at the same time.
- Cross-selling can be complex when a client's insurance risk profile differs between products.
- Regulation in certain markets means that insurers are only able to use their customer data for a specifically stated purpose.

FIGURE 1: RESPONSES BY GEOGRAPHY TO QUESTIONS "HOW MANY INSURANCE POLICIES DO YOU HAVE CURRENTLY?" AND "DO YOU HAVE MULTIPLE INSURANCE POLICIES WITH ONE PROVIDER?"

Countries	GLOBAL (n:13798)	UK (n:2002)	Germany (n:1019)	Austria (n:501)	Switzer. (n:749)	Belgium (n:500)	Canada (n:1008)	USA (n:2002)	Brazil (n:1007)	Malaysia (n:1000)	Singapore (n:1001)	Hong K. (n:1000)	China (n:1009)	Thailand (n:1000)	Europe (n:4771)	America (n:4717)	APAC (n:5010)
POLICY OWNERSHIP – % of people who have at least one policy currently	86%	85% ↓	100% ↑	100% ↑	100% ↑	100% ↑	89%	87%	48% ↓	87%	91% ↑	93% ↑	84%	80% ↓	94% ↑	78% ↓	87%
Average no. of policies they have currently	2,30	2,15 ↓	3,48 ↑	3,56 ↑	3,63 ↑	3,47 ↑	2,08 ↓	2,12 ↓	0,86 ↓	1,95 ↓	2,32	2,47 ↑	2,06 ↓	1,56 ↓	2,95 ↑	1,80 ↓	2,07 ↓
Having multiple policies with a single provider	40%	24% ↓	52% ↑	60% ↑	66% ↑	71% ↑	42%	38%	12% ↓	35% ↓	50% ↑	57% ↑	42%	18% ↓	46% ↑	33% ↓	40%

↑ indicates statistically higher than global average whereas ↓ indicates statistically lower than global average

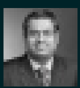
Significant Difference @95 CL

GLOBAL OVERVIEW: THEMES & TRENDS CONTINUED

- A substantial number of insurance companies are still operating on age-old platforms that are not agile enough to use the innovative tools, such as AI/machine learning, that go hand in hand with dynamic pricing and cross-selling.

- Many insurers' data repositories are not large enough to capture customer data, to analyze their customer base and then to leverage cross-sell opportunities.

Despite these challenges, cross-selling is an opportunity to boost brand awareness, repeat business and improve retention and is worth pursuing. But how?



Somnath Ghosh, UK Insurance Partner at Capco, says:

"*To be successful in cross-selling, the power of data has to be unlocked. Up to this point, the insurance industry has not been as successful at cross-selling as the banking industry, for example, which has for a longer period prioritized digitalization and the concept of data as an asset.*

While customer data has always been key to assess risk and determine premiums in an analogue world, digitalization is now unlocking further potential to create better insurance products and services at new price points and provide greater transparency and ease of access in a complex market.

By identifying the right stage of a customer journey where insurance is most needed and policy decisions are made, insurers could catch the best opportunities to bundle and cross-sell insurance products. In order to make this a success, providers must harness the data they have and find additional opportunities to collect more, then present it back to the customer in a meaningful way. For example, well-timed push notifications in apps or email alerts could help capture a specific need when intent to purchase is stronger."

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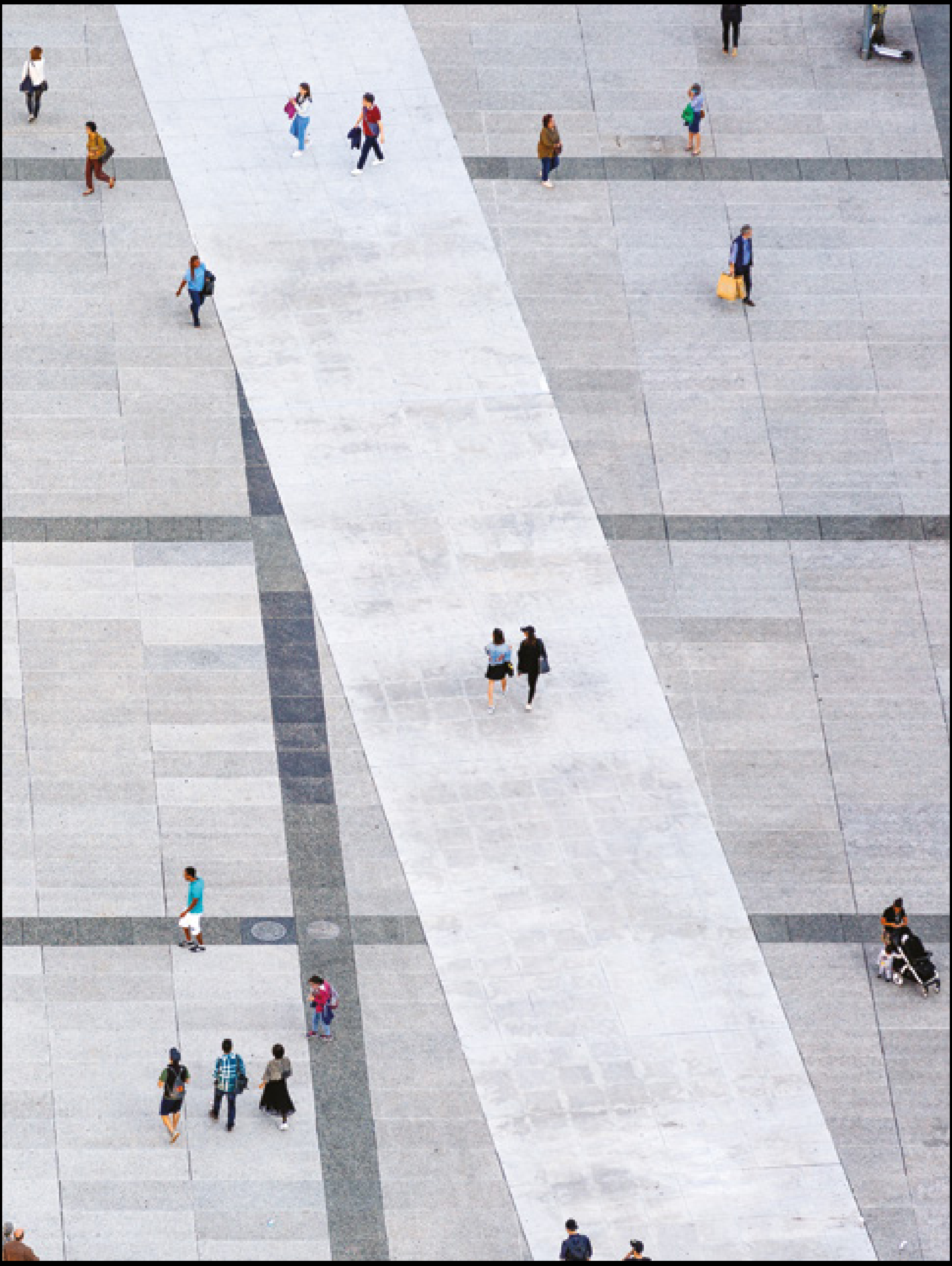

HOW WEALTH MANAGEMENT FIRMS CAN WIN IN TURBULENT TIMES

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INTRODUCTION

The wealth management industry witnessed major changes in industry structure and business models over the past decade. Technology, industry convergence, and the shift toward hyper-personalized digital solutions ensured significant shifts in the competitive landscape leading into the 2020s.

To put it mildly, the emergence of COVID-19 created an even more intense layer of complexity and change that will have a lasting effect on the industry.

In late 2020, Capco surveyed 100 professionals in wealth management to explore the current state of the market, the competitive landscape, and how the pandemic is affecting priorities and business model decisions.

Their verdict: The top three long-term effects on business operations are the expanded use of digital communication and engagement, accelerated investments into digitization, and added pressure on performance ratios. But their responses also signal belief that changes on wealth managers from here on in will be far greater than just making investments in new technology and learning to communicate effectively with clients over Zoom. The industry is being disrupted, and firms are at a make-or-break moment to either get stronger in the next three to five years or be swept aside by new competitors.

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Stevens Institute of Technology is a premier, private research university situated in Hoboken, New Jersey. Since our founding in 1870, technological innovation has been the hallmark of Stevens' education and research. Within the university's three schools and one college, 7,300 undergraduate and graduate students collaborate closely with faculty in an interdisciplinary, student-centric, entrepreneurial environment. Academic and research programs spanning business, computing, engineering, the arts and other disciplines actively advance the frontiers of science and leverage technology to confront our most pressing global challenges. As Stevens celebrates its 150th anniversary, the university continues to be consistently ranked among the nation's leaders in career services, post-graduation salaries of alumni, and return on tuition investment.

INTRODUCTION CONTINUED

This report, produced in collaboration with the School of Business at Stevens Institute of Technology, presents the top trends identified in the survey results and offers strategy tips on how to adapt to the industry's new normal.

This report answers these questions:

1. What is the current state of the industry? How have firms responded to COVID-19 disruption?

2. How have client expectations changed and how is the industry trying to meet those expectations?

3. What major steps do firms need to take in terms of capabilities development, organizational design, strategy, and technology implementation to be positioned for winning competitively over the next three to five years?

A DEFINING MOMENT

The collision of already ongoing digital transformation with the arrival of the pandemic made this is a defining moment for many wealth management firms, especially smaller players. For firms under-invested in digital technologies, COVID accelerated the imperative for transformation. Those already invested heavily in digital were able to better react to the uncertainty and win a competitive advantage.

Chaos always provides new opportunities for growth, resetting the competitive landscape and potentially creating new winners and losers. The winners are those who use the disruption to forge new collaborative ways of working, build powerful engagement with users, and deploy technology to drive down cost while speeding up innovation.

Meeting this challenge will be difficult for many in the industry, where structural barriers to change include an over-regulated environment, increasing product complexity, and longer launch times than found in other industries such as retail and fashion.

Can wealth management firms shake off the old ways of working fast enough to remain competitive? Can they build capabilities in areas such as artificial intelligence (AI), innovation, and user experience? Or will they be overwhelmed by fintechs, competitors from other industries, and behemoths fed by industry consolidation?

That's not really a question, of course. Embracing the digital era and overcoming the pandemic's effects is not a choice anymore. It's a requirement; table stakes to stay in the game.

CURRENT STATE: HOW FIRMS HAVE RESPONDED TO COVID-19 DISRUPTION

Years before COVID-19 began its noxious global spread, many industries, including wealth management, were already in technology transformation. The arrival of digital technologies, such as mobile, cloud, and AI, fundamentally changed how business is conducted and raised expectations for what services consumers demand from their favorite brands.

Thanks to digital, leading companies were learning to work more productively and efficiently and deliver products to market more quickly. They had to change because their customers were demanding it. 24/7 online access, easy ordering with fast delivery, and smart phones that underwrite a new mobile economy reprogrammed consumer behavior. Firms that didn't up their digital game were left behind.

Even in high-touch industries like wealth management, firms experienced changing customer expectations as their clients began to enjoy the benefits of a digital lifestyle. Couple this trend with the incursion of digitally savvy fintechs and tech giants, the industry was faced with significant enough challenges to begin to modernize. By the end of 2019, many wealth management firms had initial efforts underway to provide more services online, target new customer segments, and boost IT security.

And then came the virus.

Firms located in the West and East were the first to transition to work-at-home operations, learning their lessons about new approaches months in advance of peers in the South and other parts of the United States, where masking and lockdowns arrived more slowly.

If wealth managers had already thought digital transformation was arriving too quickly, COVID-19 only stepped on the accelerator. In our survey, 89% of respondents agreed the pandemic sped up the pace of change or introduced new forces and behaviors for delivering services to customers. And, 64% were considering the possibility that the face-to-face model was about to change in some way.

One example: the shift to remote communications. 79% of survey respondents reported making additional investments to support remote work processes, such as video tools, upgraded network services and security, and automated customer service.

According to Celent,[1] annual wealth management spending in IT is estimated to grow from $21.4B in 2020 to $24B annually in 2023, a 5% compound annual growth rate (CAGR).

To accommodate the client's growing expectation for hyper-personalization, 67% of respondents said they have taken major initiatives in AI and data analytics to support decision-making and automation for investment management.

> “*Suddenly, advisors departed the office to work at home. All poll respondents indicated that call volumes jumped at least 20%. Advisors were meeting clients by video rather than face-to-face, a trend the industry had resisted previously.*”

Turning on new technology wasn't the only response necessary in the industry. With offices and branches shut down for an extended period, 70% of respondents said COVID disrupted traditional methods for client acquisition and business development. The industry has long prioritized face-to-face prospecting, but 86% of respondents said their approach to client interactions would shift to remote communications or hybrid models that mixed the two.

To find new customers, leading firms cast their net more widely by using data gained from cross-collaboration between advisors, marketing, and digital media to turbocharge lead generation.

For example, Bank of America launched Life Plan in October 2020, “a new digital experience through which clients can set

CURRENT STATE: HOW FIRMS HAVE RESPONDED TO COVID-19 DISRUPTION CONTINUED

and track near- and long-term goals based on their life priorities, and better understand and act on steps toward achieving them." Because clients use the bank's mobile app and online banking platform to participate in Life Plan, there is a substantial opportunity for Bank of America to collect data from across the organization and cross-sell financial products and services, including wealth management.

On the institutional side, it has become much more difficult for fund wholesalers – a vital source of potential investment options for customers – to get face time with advisors and asset managers. This is likely to result in dramatic rearrangements in the way wholesaling will be done. As with consumer prospecting, expect a much tighter interaction between wholesalers, advisors, marketing, and social to get things to work. Firms are thinking of ways to give wholesalers digital tools and materials necessary to approach advisers and institutional investment managers, but also ways to provide that information back to the client.

The good news for firms that invested early and heavily into digital before the pandemic, and that enabled advisor, inquiry, and collaboration capabilities, was steady growth over the course of the last 18 months. Firms behind the curve lost business even as they tried to quickly standup capabilities, such as virtual meetings, virtual whiteboarding, and virtual chats.

These effects on how wealth managers do business are not temporary, our survey-taking executives said: 64% believe the new interaction model (non face-to-face) will be permanent.

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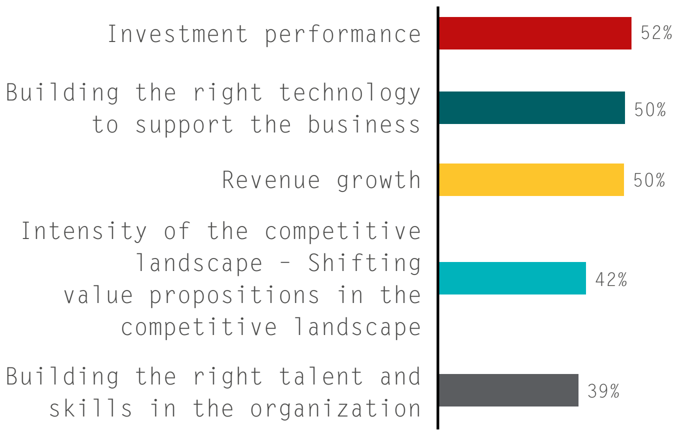
TRENDS THAT KEEP LEADERS AWAKE AT NIGHT (Q7)



CURRENT STATE: HOW FIRMS HAVE RESPONDED TO COVID-19 DISRUPTION CONTINUED

period, 70% of respondents said COVID disrupted traditional methods for client acquisition and business development. The industry has long prioritized face-to-face prospecting, but 86% of respondents said their approach to client interactions would shift to remote communications or hybrid models that mixed the two.

To find new customers, leading firms cast their net more widely by using data gained from cross-collaboration between advisors, marketing, and digital media to turbocharge lead generation.

For example, Bank of America launched Life Plan in October 2020, "a new digital experience through which clients can set and track near- and long-term goals based on their life priorities, and better understand and act on steps toward achieving them." Because clients use the bank's mobile app and online banking platform to participate in Life Plan, there is a substantial opportunity for Bank of America to collect data from across the organization and cross-sell financial products and services, including wealth management.

On the institutional side, it has become much more difficult for fund wholesalers – a vital source of potential investment options for customers – to get face time with advisors and asset managers. This is likely to result in dramatic rearrangements in the way wholesaling will be done. As with consumer prospecting, expect a much tighter interaction between wholesalers, advisors, marketing, and social to get things to work. Firms are thinking of ways to give wholesalers digital tools and materials necessary to approach advisers and institutional investment managers, but also ways to provide that information back to the client.

The good news for firms that invested early and heavily into digital before the pandemic, and that enabled advisor, inquiry, and collaboration capabilities, was steady growth over the course of the last 18 months. Firms behind the curve lost business even as they tried to quickly standup capabilities, such as virtual meetings, virtual whiteboarding, and virtual chats.

These effects on how wealth managers do business are not temporary, our survey-taking executives said:

> *"64% believe the new interaction model (non face-to-face) will be permanent."*

HOW THE PANDEMIC CHANGED CLIENT EXPECTATIONS AND HOW THE INDUSTRY IS RESPONDING

According to a recent survey by fintech firm Broadridge Financial Solutions,[2] 57% of investors said communications with their advisor had changed because of being remote. And 62% of that group expect to entirely or partially maintain their new methods after the pandemic ends. Face-to-face is not dead, but virtual relationships are here to stay.

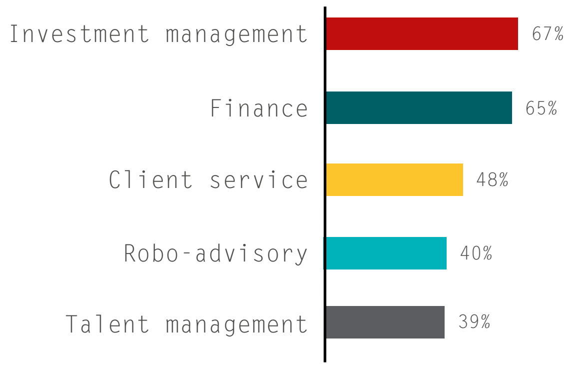
The Broadridge findings also highlight the dramatic shift customers are making to social media to connect with advisors. For example, 86% of Gen Z and 87% and Millennials said they were comfortable having their advisor follow them on social media to offer a more customized experience.

COVID has changed our customers in another way, and to the advantage of wealth managers.

When the pandemic arrived in early 2020, markets dove 28%, people lost jobs, and health was under siege. As happens in most life-altering events, people suddenly reassessed their own situation. How protected against the new risks were they? Did they have adequate access and control of their assets? How should they think of wealth preservation and growth over the next few years? Have their personal goals changed? Have their professional goals changed?

There was another phenomenon benefitting wealth management firms. With fewer expenses during lockdown, individual savings rates went up. So did purchases of life insurance products. The real estate market in many communities soared. People focused more attention on financial planning, even exploring lifestyle alternatives like new (cheaper) places to live and financial opportunities offered by cryptocurrency. Financial advisors of all stripes were ready to help.

WHERE COMPANIES ARE MAKING TECH INVESTMENTS TO ENHANCE DECISION-MAKING AND AUTOMATION (Q23)



FOUR STEPS TO POSITION YOUR FIRM FOR WINNING COMPETITIVELY OVER THE NEXT 3-5 YEARS

Our poll results with wealth managers reveal they believe, and we agree, that wealth management firms must position themselves for competitive success in four major areas: strategy, organizational change, capabilities/competencies, and technology. We intentionally listed technology last on the list not because it is least important, but rather because the tools selected must support the other three areas.

1. STRATEGY

Business models are changing to meet increasing customer expectations and address new competitive threats.

The rise of the advisor

One shift from the pandemic is firms reducing their reliance on a product-led strategy for growth, rather emphasizing holistic planning and advice. A meeting with a financial adviser, for example, can easily lead to discussion of the importance of healthcare planning and long-term protection.

Attracting underserved customers

To find new growth areas, wealth advisers need to attract younger clients and target underserved markets. There's widespread agreement that the mass affluent market will continue growing, with 90% of respondents saying they expect to see a continued expansion of services offered into banking, insurance, and other financial service products.

Cerulli Associates projects that nearly 45 million U.S. households will transfer a total of $68.4 trillion in wealth[3] to heirs and charity over the course of the next 25 years. Firms would be smart to target second-generation and extended families with easy to access and understand wealth preservation advice and related banking and investment services.

The rise of the one-stop shop

Even before the pandemic, financial service firms were shifting towards becoming a one-stop shops for clients, with wealth management advice leading the purchase of other financial products tied into the ecosystem, such as banking, mortgages, and insurance. Robinhood, an online discount brokerage that offers commission-free investing and trading, has now introduced banking products;[4] online payment provider PayPal is considering a stock-trading platform.[5]

While 27% of all customers say they want more one-stop-shop options[6] for all their finances (as do 66% of investors under age 30), relatively few firms actually offer them today, presenting a sizeable opportunity.

STRATEGY RECOMMENDATIONS IN A POST—COVID WORLD

1	2	3	4
STRATEGY	ORGANIZATIONAL CHANGE	CAPABILITIES DEVELOPMENT	TECHNOLOGY
A shift away from product sales to relationships	Customer at the center	Talent acquisition and retention is vital	To reduce costs while improving revenue

FOUR STEPS TO POSITION YOUR FIRM FOR WINNING COMPETITIVELY OVER THE NEXT 3-5 YEARS CONTINUED

Some of these offerings can be provided with in-house resources, but increasingly firms are looking to partner with other providers and acquiring early-stage fintechs to provide services in areas they may lack, such as financial wellness, financial education, or automated bill pay. And it gives traditional players who have typically targeted high-net-worth customers a chance to penetrate the largely underserved mass markets with more sophisticated offerings than just robo-advisers.

An example of this dynamic in action was Morgan Stanley's $13 billion acquisition of E-Trade in 2020. Although there was some clientele overlap in those businesses, E-Trade's direct-to-consumer digital channel and strong brand would strengthen.

Morgan's wealth management offerings, the company believed. (Continuing the M&A dance, Morgan sold off E-Trade's custodian registered investment advisor custody business to Axos Financial six months later.)

As clients come to expect a holistic approach to their financial lives, a seamless digital experience will provide an advantage in an increasingly competitive market, according to our surveyed managers. Silicon Valley's most prominent names are well positioned to offer that experience. 92% of respondents agreed that Big Tech, such as Amazon, Apple, Facebook and Google will enter the market, and 50% believe these companies will create significant disruption in the wealth management industry.

The new landscape for opportunity

Changing conditions are also expanding business opportunities for regional banks, who have traditionally prospected in their own backyards. Thanks to technology and the willingness of customers to move geographies, location matters less and less. This means regionals don't need a retail bank footprint to serve wealthy clients anymore – they can follow them as they move, or prospect in entirely new areas. And technology can be a great equalizer, allowing small firms to compete with the majors.

2. ORGANIZATIONAL CHANGE

Traditional hierarchical organizational structures are now too slow and too bureaucratic to guide organizations through today's rip currents.

To be effective, wealth management firms must become nimble, speed decision making, and, most importantly, put the customer at the center of all they do. Opening an account shouldn't take days, it should happen instantaneously, as fintechs have proven. To be this agile, firms will need better technology – but more importantly, they need a mindset change towards becoming less risk adverse.

Here are several ways organizational design must change.

Innovate and iterate

New products and services must be introduced in months, not years, and constantly improved based on cycles of customer feedback. Fail fast is the new mantra. In 2020, even as many financial services firms considered cryptocurrency too risky to build services around, PayPal introduced support for cryptocurrency payments[7] in Bitcoin, Bitcoin Cash, Ethereum, and Litecoin. PayPal is partnering with Paxos Trust Company, a regulated provider of cryptocurrency services.

Put the customer first

Creating an engaging user experience (UX) is just as important as building great products because customer experience (CX) promotes loyalty at a time when clients face few barriers to jumping to a competitor. And customers aren't just consumers; they should also be brought in to help design offerings. Being customer-centric instead of being led by product development will be a major mind shift for the industry.

Consider leapfrog tactics and strategies

Although the industry has made initial investments in artificial intelligence for improving risk analysis and marketing initiatives, the bigger bet is to use AI and machine learning to vastly enhance the customer experience. (See "Put the customer first" above.) For example, while fintechs use technology to remove human advisors from client interactions, we believe the goal should be to promote the value of personal advisers by providing them with comprehensive and up-to-the-second customer data that enables customized solutions at the time when the client is ready to make a decision.

FOUR STEPS TO POSITION YOUR FIRM FOR WINNING COMPETITIVELY OVER THE NEXT 3-5 YEARS CONTINUED

3. CAPABILITIES DEVELOPMENT

Wealth management companies must ensure their employees are equipped with the technology skills needed to support an enhanced digital experience. Survey respondents said the biggest obstacles to undertaking digital transformation within their companies are skill gaps in areas such as technology and digital processes.

Talent acquisition and retention

62% of respondents expressed a higher level of concern for employee retention during the pandemic. The highest turnover was seen in finance, management, and wealth advisor positions. Firms must develop strong human resources incentives to educate, promote, and compensate their top performers. On the recruiting side, wealth management companies should be active on college campuses attracting digital analysts, quantitative analysts, data scientists, programmers, and software engineers.

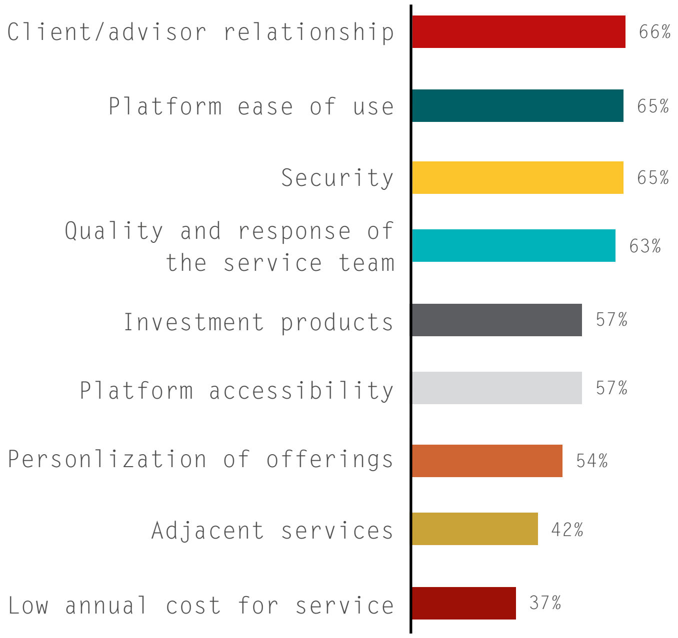
Training

The pandemic forced companies to adopt new training method s to administer remotely, with 75% of respondents noting an increase in e-learning. Introducing new training for employees to upskill quickly will allow wealth managers to keep their workforce on the cutting-edge amid digital transformation.

When it comes to external training, the majority of respondents said they are pointing employees to certificate programs (56%), rather than full master's programs. These programs are more focused, so an employee can get the specific training they need in a matter of months instead of years.

Ensuring the workforce is built out to support these digital initiatives and capitalize on novel opportunities will only serve to benefit those looking to remain competitive in the market.

WHAT CAPABILITIES ARE MOST NEEDED TO WIN IN THE MASS MARKET?(Q8)



FOUR STEPS TO POSITION YOUR FIRM FOR WINNING COMPETITIVELY OVER THE NEXT 3-5 YEARS CONTINUED

Partnering and M&A
To meet ever-changing customer expectations and create new revenue sources, firms will need to find business partners. Companies may create their own digital ecosystems and invite partners to join, or they may choose to become part of ecosystems created by others. Identifying, analyzing, and negotiating those partnerships require special skills.

When looking to introduce a new capability, you need qualified experts to ask and answer these questions: Does it make sense for us to build that capability organically and have something unique to offer? Or should we acquire a company with that expertise? If the capability isn't a core requirement, is a marketplace partnership a possibility? Who should we target, and will they be an organizational fit for us? What are the negotiation parameters and financing options?

User experience
In order to drive lasting loyalty with clients, firms need to create compelling UX in every interaction. UX not only delivers information, it collects user behavior data that can then be used to improve the experience even more. (Unfortunately, too many companies outsource UX, losing the ability to learn more about their customers.)

Where once firms focused most of their innovation on new products, today's digital technologies have changed the game. In areas like the retirement income marketplace, winning strategies focus less on product development and more on digital wrappers and integrations that combine existing products and services in user-friendly packages.

4. TECHNOLOGY

98% of respondents believe the pandemic will continue to make expense reduction a significant priority. 66% of respondents said it had a significant effect on both revenue and profitability. Technology can help both reduce expenses and boost revenue.

IT investments to consider include:

Robotic process automation (RPA) to cut transaction costs and speed tasks, such as account setup, implementing workflows, and meeting regulatory review and reporting requirements. RPA is one of the least expensive technologies to implement while delivering the quickest return on investment.

Artificial intelligence and machine learning software to hyper-personalize offerings for customer segments, guard against network security threats, and assess risk. Most firms won't go as far as Wealthfront,[8] which proudly boasts that all its services are offered through software-run programs. Most wealth management firms are following a hybrid approach, teaming some percentage of AI smarts with human advisors. Morgan Stanley's Next Best Action system employs machine learning to alert human advisors to possible investments for particular clients. Just how humans and technology are blended will depend on a firm's overall goals, the investment types they recommend, and tech tolerance of its clients. Decisions with high emotional content will always be better handled by an actual advisor.

Cloud computing technologies, such as big data analytics, predictive analytics, and test and development. According to our industry survey, providing digital access to a range of products and services for customers will be the top differentiator for winners in wealth management over the next two years. To most wealth managers, this observation comes as no surprise. In fact, most firms have been upgrading their web platforms and online services for several years. What is new is that firms have to become better users of the data this technology provides to create powerful customer targeting and personalization of services – another key differentiator for the survey respondents.

The problem: Many traditional wealth management firms still operate with legacy IT systems, spit-and-bailing wire patchworks of bolted-on hardware and out-of-date applications. They are costly to maintain and come with security risks. In truth, many companies lack the IT firepower required to develop and build systems capable of delivering compelling solutions in this regard.

CONCLUSION: WEALTH MANAGEMENT'S NEW IMPERATIVE

A wealth management organization built on traditional practices and tools cannot win in today's environment. The waters are moving too fast. Black swan events, like COVID-19 and climate change, seem to appear more frequently. Customers are constantly raising the bar about what they want and how quickly they expect delivery. Technology advances, while welcome, are also costly to install and require organizational changes that upset the status quo.

The biggest problem for wealth management firms is that to succeed in the new normal, they must act quickly to change – and this is not an industry built for speed. Organizations must be nimble, innovative, and able to pivot on a dime as client expectations move in new directions. A transition of this magnitude requires top-to-bottom organizational commitment directed from the CEO and board downward, even as 46% of our survey-takers point to a lack of buy-in from executives as a primary obstacle to change.

To begin, here is some advice that won't cost a cent to implement and perhaps most will agree with. Embrace reflection.

When the playing field shifts as constantly as today, wealth management leaders need to consistently re-evaluate what they're doing. Roadmaps are good only for as long as the road they are driving remains the same. It rarely does. Firms must be willing to constantly re-evaluate their strategy, resource investments, and capabilities to make sure they still are still valid. Act quickly to make changes. Then validate again.

If there is one lesson we have learned from the pandemic, it's this. Success is difficult, painful, and hard won. And it could be lost again tomorrow. But organizations will most certainly not win unless they create a new playbook for their future. Delivering the status quo is no longer an option.

RESEARCH METHODOLOGY AND DEMOGRAPHICS

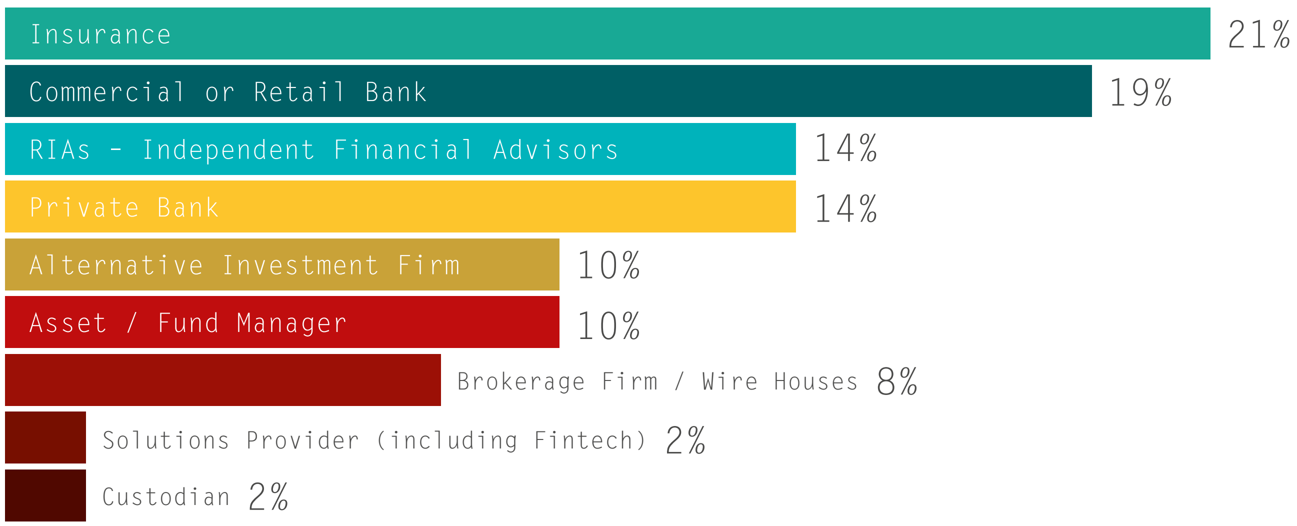
Capco surveyed online 100 wealth management professionals in November 2020 to explore:

- The current state of the wealth management market
- The competitive landscape
- How the COVID-19 pandemic is affecting priorities and business model decisions

THE STEVENS SCHOOL OF BUSINESS PARTNERED WITH CAPCO ON THE SURVEY'S DESIGN AND PROVIDED DATA ANALYSIS AND INSIGHTS:

Survey respondents by industry segment

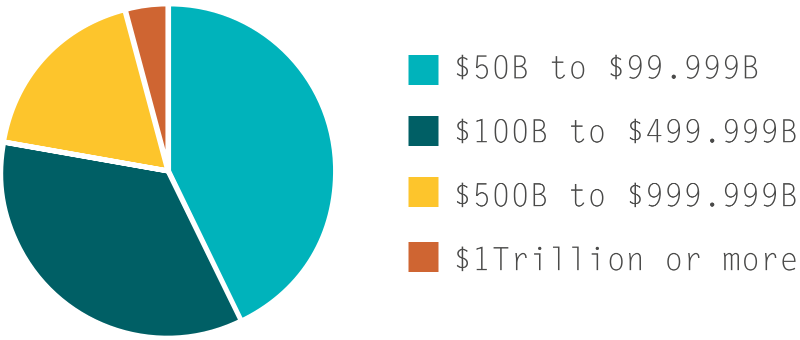
Survey respondents came from nine segments of the wealth and asset management industry, with the majority from insurance (21%) and commercial or retail banks (19%).



RESEARCH METHODOLOGY AND DEMOGRAPHICS CONTINUED

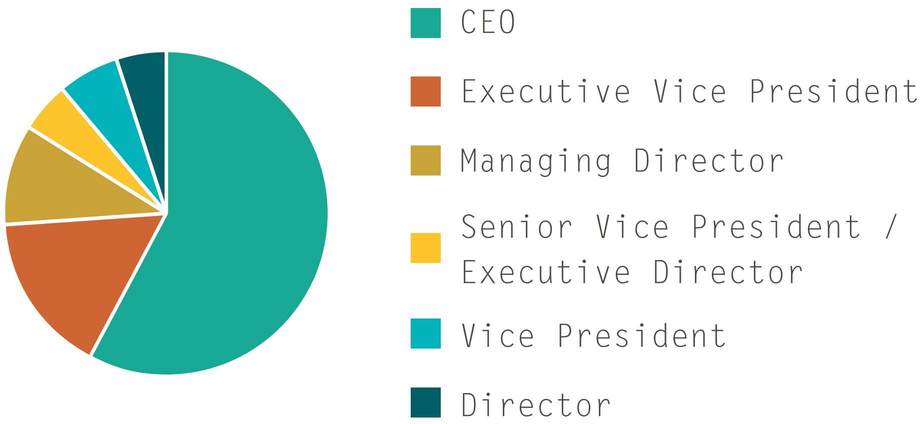
FIRM SIZE-ASSETS UNDER MANAGEMENT

The majority of firms surveyed, 43%, had $50 to $99.999 billion in assets under management. 35% of firms had between $100 to $499.999 billion in assets under management.



RESPONDENT TITLES

The majority of respondents were senior executives. More than half, 58%, were chief executive officers.



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AR YOU READY?

A LOOK INTO THE FUTURE OF AUGMENTED AND EXTENDED REALITY IN THE FINANCE AND INSURANCE INDUSTRIES

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THE NEXT DIGITAL REVOLUTION

We are on the doorstep of the next digital revolution. In a not-so-distant future, interactions with our digital landscape will be drastically changing when the next generation of XR (extended reality) products hits the retail market. Is the financial industry ready for these changes?

XR covers a range of technologies that have been available for the better part of the past decade: virtual reality (VR), augmented reality (AR), and mixed reality (MR).

The future of the finance and insurance sectors will be greatly affected by the potential of XR. In the following whitepaper, we explore what an XR enabled world might look like, the market landscape and current state of XR based technologies, their probable effects and why the finance and insurance sectors should prepare for their adoption.

Before we review the current state of the XR landscape, let us take a look at everyday life in this near future.

> *"The possibilities to create new interactions for customers, employees, and the community are numerous, including training, remote interaction, self-assistance, marketing, fraud prevention, digital workplace extension, and more."*

XR TOMORROW

Meet John and Mary. John, a young entrepreneur, and Mary, an insurance broker, live in a not-so-distant reality where XR is a part of day-to-day life.

This morning, John finished a conversation through his HoloLens 3 headset with a seller looking to part with an old Ford Mustang. John believes he can fix up the old car and flip it for a profit. There's a small hiccup though: the seller is old-school and will only agree to a cheque deposit to close the sale. HoloLens 3's integrated assistant, Luni, has already determined John will need cheques and ordered them from John's bank. Luni also asks John if he would like instructions on how to use cheques. As John has a few minutes, he acknowledges. Luni immediately retrieves the cheque tutorial from John's bank, overlays it with John's current surroundings and displays an open chequebook on a nearby counter. The tutorial then runs John through the key elements needed to fill out a cheque. John is curious about the set of characters at the bottom of the cheque and indicates this to the training program. The requested information appears and, highlighting each set of numbers, indicates these represent his bank, branch, and account number.

Meanwhile, Mary is in her insurance company's quarterly broker meeting. All the Canadian brokers have joined with their avatars in a virtual meeting. Mary enjoys these meetings as they allow her to connect with her peers at least every quarter. While in the meeting, she spots Jane, with whom she meant to catch-up. As the meeting is not mandatory, she sends Jane a request for a private chat. Once Jane accepts, both Mary and Jane find themselves on a Hawaiian beach, Mary's preferred virtual environment for "water cooler" chats. Now that they are somewhere private, they get down to business regarding a corporate prospect they have both been interested in bringing in as a client.

In the meantime, John has connected with his financial planner to determine how to best invest his recent earnings. With the wave of a hand, the advisor brings up John's current accounts. John can easily review them side-by-side and they overlay the peaceful lake vista John prefers for conducting this type of business. In a few gestures, the advisor can show John a few interesting investment scenarios and provide a comparison of each, with pros and cons analysis all showing in John's 360-degree view of his financial assets and liabilities. Having reviewed the options and tweaked the plan to his liking, John has authorized the execution of the new plan by having his HoloLens 3 scan his retina.

By now, Mary has boarded an autonomous Uber to visit one of her clients who needs her advice with a claim they intend to submit. While the Uber drives her to her destination, Mary uses the gesture recognition capabilities of her MagicLeap 2.5 headset to pull up the latest claim reports she must review and approve. Mary's client is anxiously awaiting her as they were in a recent car crash that they didn't immediately report to the insurance company. Mary reassures the client that, as a premium plus member, these issues are waived. Looking at the damage to her client's vehicle, her MagicLeap communicates directly with the insurance company's damage evaluation system. After a short moment, Mary can provide her client with reassurances that, given their policy, they'll only need to pay the deductible of $500 and the other damages, estimated by the software at around $5,000, will be taken care of. Mary is also given the details of several garages in her client's neighborhood who could perform the needed repairs.

As Mary finishes with her client, John enters a boutique he found on his walk home. The boutique sports an interesting handbag which John thinks Mary might like. As John looks at the handbag, his HoloLens scans the bag and connects with his bank's fraud detection software to determine its provenance. The software alerts John that the bag is likely a knock-off given some of the defects detected by the HoloLens' built-in cameras and millimetric lidar sensor. John decides to buy Mary some flowers instead.

These are just some of the user experiences that await us in just a few years' time, as XR technology becomes more pervasive in society. Today the HoloLens 2, Magic Leap 1 and Google Glass 2 are already used in multiple industrial environments, from Intel to BMW and others. We won't have to wait long before seeing these technologies emerge in the retail market. Will our industry be ready? Will you be ready?

MARKET LANDSCAPE FOR XR

Based on a survey conducted in 2019, the majority of (77%) extended reality professionals[1] believe that mainstream adoption of the technology will occur within the next two years (by 2023).

Adoption for the technology is typically classified into two segments: consumer and enterprise. Consumer adoption today is still limited and probably best represented by the sale of more than 5 million PlayStation VR units[2] (since 2016). However, enterprise adoption is much more representative, such as Intel's adoption of the HoloLens 2 to improve productivity in its Irish semiconductor fabrication facility,[3] and others we will cover in the rest of this whitepaper.

The current adoption of XR is most prominent in healthcare, education, and location-based VR experiences, such as museums and art installations. To date, enterprise adoption of the technology has the following characteristics:

- Specific business intention and usage
- Hardware is available within a specific facility (not on the go)
- Users typically don't bare the cost of access, organizations do

Like any new technology making its entrance to the mainstream market, there are obstacles to overcome. XR is faced with challenges like those faced by smartphones in their early days. On the consumer side, the challenges include hardware constraints (limited accessibility and battery life for constantly-on, on-the-go productivity) and limited software support in the marketplace. XR is also a developing domain that demands new skill sets, design standards, and tooling to further refine its capabilities. Fortunately, like with any technology, adoption will perpetuate itself, snowballing the integration of XR products into everyday life.

However, interest in XR remains high, with technology leaders, such as Microsoft and Google, as well as specialized start-ups, such as Magic Leap, competing and rolling out new products in this domain. Qualcomm, the world's largest producer of mobile chips, is also betting big on these technologies, with their investment in the XR2 chipset that combines 5G, AI and VR capabilities,[4] as well as the acquisition of Wikitude, an AR development platform. Apple has also steadily phased in AR and VR capabilities with its devices, along with the release of ARKit and RealityKit, AR software development frameworks for the iPhone. If rumors are to be believed, Apple is expected to launch an AR headset in Q2 of 2022.

According to report published by Research And Markets,[5] projection of XR adoption for the next five years is optimistic as the market is projected to grow from $42.55 billion in 2020 to $333.16 billion by 2025, at a CAGR of 50.9%. A projected market potential of $1.5 trillion by 2030 according to PwC's 2019 "Seeing is Believing" report.[6]

TODAY

First, the most recent announcement from Facebook regarding the name change of its parent company to Meta and future focus on all things Virtual Reality should be an indicator of things to come. But Facebook are far from alone to focus on XR related technologies.

According to recent Microsoft reports, MR is already being successfully deployed for the following industrial use cases: Contextual Overlay,[7] Design and Prototyping,[8] and Remote Assistance.[9] And as per their recent announcements at the Microsoft Ignite conference, they are also invested in bringing virtual reality to everyone.

When you hear contextual overlay, think a heads-up display that provides the user with real-time input and feedback about the activities they conduct. For those who operate in the field, having real-time, intuitive access to relevant data is a game-changer as demonstrated, for instance, by Lockheed Martin (manufacturer of the F-22 Raptor fighter jet).[10]

NASA contracted Lockheed Martin to build the Orion spacecraft. To help their team work more efficiently, Lockheed Martin used MR to enable remote collaboration and step-by-step holographic training overlays. While most companies experience a 30% reduction in human error after transitioning to MR, Lockheed Martin has not had a single instance of human error since first implementing the HoloLens in 2017. Just to emphasize how incredible this is, Lockheed Martin is building one of the most advanced machines in human history and has had ZERO cases of human error. The effect to project cost has been astounding – the Orion spacecraft will have over 57,000 fasteners and Microsoft's HoloLens 2 allows Lockheed Martin to save $38 per fastener. MR has successfully allowed touch labor to be reduced by an entire magnitude, what once took an entire eight-hour shift can now be done in just 45 minutes!

In the area of design and prototyping, the technology allows users to easily visualize, iterate, and collaborate on proposed designs.

Airbus, a leading aircraft manufacturer, is leveraging AR to design and prototype their next generation of aircraft.[11] Thanks to the power of AR, they have seen their process accelerated by 80%, and that's just for the design process: 30% improvements of complex tasks in the assembly process are likewise expected.

With the ability to create a remote presence anywhere, the platform will enable a host of companies to further their ability to provide remote assistance and remote sales capabilities.

Italian luxury goods brand Salvatore Ferragamo is working on a new sales platform for their Tramezza men's footwear collection.[12] This platform would allow customers to interact with a 3D reproduction of their shoe, allowing them to consider different combinations of materials, features, and other details much more intuitively. Human sales associates will also be able to provide remote assistance through the platform, allowing Salvatore Ferragamo to bring the in-store experience into customers' homes. The platform is expected to bring a whole host of benefits, such as optimizing the customer journey, simplifying purchase methods, and improving space management of physical stores.

In Korea, creative technology company Giantstep has been making headlines in the media and entertainment business with their work on virtual influencer Vincent, or by producing the virtual avatars for the girl band AESPA. Asian countries, such as Korea, are avid consumers of virtual content and companies, such as Giantstep, have been reaping the benefits, the company was introduced on the Kosdaq on March 24 of this year and has a current market cap exceeding $500MM.

Whether it is training, design, sales, remote assistance, or entertainment, these are only a few ways industries are starting to scratch the surface of the possibilities offered by XR platforms. We provide further examples of new and existing companies who are betting big in these technologies in Table 1 (note that this table only lists a few additional examples, as an exhaustive listing would turn this whitepaper into a book).

TODAY CONTINUED

TABLE 1: SAMPLE OF COMPANIES ACTIVE IN XR

COMPANY	INDUSTRY	WHAT THEY DO IN XR
Bosch	Automotive	Bosch AR platform for technical training.
Sony	Entertainment	Sony Playstation's VR headset is probably one of the biggest success stories in retail VR with over 5 million units of the first-generation headset sold and a new headset in the works for its Playstation 5 lineup.
Microsoft	Software and Hardware	Microsoft has introduced Microsoft Mesh that will enable collaboration in XR anywhere using their HoloLens hardware.
Spatial	Software Solutions	Spatial offers a platform that can create "virtual space" everywhere.
Snap	Social Media Services	Snap (the company behind Snapchat) launched asset of AR glasses geared toward the development community in May 2021.
Facebook	Social Media Services	Facebook bought Oculus, a VR company, in 2014 and has since launched Horizon a VR social playground. They recently unveiled smart glasses built in collaboration with Ray-Ban which they consider a steppingstone toward AR.
Ikea	Furniture	Ikea has built augmented reality capabilities in their shopping app since 2017 and launched IKEA Studio in 2021.
BMW	Automotive	BMW has been using AR in its pilot plant for vehicle prototyping.
NReal	XR Glasses Startup	NReal is an AR glasses start-up that is one of the first companies to produce a product using the capabilities of the Qualcomm's XR chipset.
Lululemon	Sports Apparel	Lululemon is launching the MIRROR, an MR mirror/ display technology for indoor training with real-time feedback.

WHAT DOES THIS MEAN FOR THE FINANCIAL AND INSURANCE SECTORS?

To date, the smartphone is arguably the technology that had the greatest effect in creating a symbiotic experience between people and the digital world, seamlessly connecting people ad systems anytime, anywhere. By blurring the boundaries between the real world and the digital, XR is taking this one step further and fully immersing humans into the digital experience with a more profound impact.

The possibilities to create new interactions for customers, employees, and the community are numerous, including training, remote interaction, self-assistance, marketing, fraud prevention, digital workplace extension, and more (see Table 2).

TABLE 2: ADDITIONAL VR AND AR USAGE SCENARIOS

SCENARIO	DESCRIPTION
Workplace Improvement	From empowering people to determining where work is done, to how work is done, the ability to improve the work environment using XR, along with the already stated productivity improvements, are driving adoption of these technologies in the workplace.
Remote Interaction	Because of the COVID pandemic, remote working has become commonplace. Though it helped us deal with an unprecedented event in our society, virtual interaction via Teams, Zoom, and other remote meeting technologies leave much to be desired in their ability to support true interaction, brainstorming, and collaboration. With XR technologies, real telepresence can become a reality.
Banking	Using these technologies, it is easy to imagine the bank branch of tomorrow, either a fully virtual branch or a branch without desktops, in which each teller uses an augmented reality setup to interact directly with the client without the need of a desk or computer station.
Property acquisition	Some banks have already started offering customers assistance through VR for the purchase or sales process of a home. Others have started rolling out capabilities to help customers with home inspections.
Training	Safety training or assistance to help employees, such as adjusters or tellers, to recognize dangerous situations and react appropriately, either as a training exercise or even in real-time.
Fraud Prevention	By combining the additional visual and location data provided through the technologies embedded in AR hardware, together with data mining and machine learning, additional fraud prevention capabilities will be in everyone's reach, potentially even including always on lie detection.
Marketing	AR is an emerging trend in experiential marketing. It allows brands to craft new ways to engage with the customer through methods, such as try before you buy, new ways of branding, the creation of interactive sales materials, and more.

WHAT DOES THIS MEAN FOR THE FINANCIAL AND INSURANCE SECTORS? CONTINUED

To participate in this evolution, it will be key to build the skills and tools needed to harness the capabilities of this coming digital era. Gone is the web browser, HTML, and CSS, gone are the 2D graphic artists and their content creation tools, and gone is the ubiquitous mouse or trackpad. Tomorrow's skills and tools enable navigation in a three-dimensional world not limited by two-dimensional windows. To quote Spatial, "your room is your monitor, your hands are the mouse."

This brand-new set of skills and tools will include:

- JavaScript, Angular, and React development skills will be replaced by skills more akin to game development as the browser is being replaced by real-time 3D engines, such as Unity or Unreal.

- Experience designers will have to build journeys in a three-dimensional world with a much wider range of interactions, integrating the experience with the user's evolving physical spatial context. To take this even further, designers can even create the context of interactions through the definition of specific Metaverses.[13]

- Content creators will be building 3D content with a different set of tools, switching from 2D tools, like Illustrator, to 3D ones, like Medium, Blender, and Substance Painter.

These are just a few examples of how we will need to adapt for this new reality. Further investments will be needed in infrastructure, systems, and services, to provide the real-time contextual XR interactions people will come to expect.

- Most back-end systems used in the finance and insurance sector already struggle to deliver information in pseudo real-time for today's digital requirements. Tomorrow, these systems will need to deliver the same information in real-time for interactions that require sub-second response times.

- To provide the right information in the right context, heavy use will be made of geo-location services and real-time 3D image recognition services.

Whether it is dealing with the complexities of interacting in the Metaverse with non-binary avatars, handling the computational and networking intricacies to achieve real-time contextual mapping, figuring out the legal and social ramification of privacy in a virtual world, or simply the need to resource or upskill to tackle these challenges, the scope of change the financial industry will face is considerable! We need to prepare today so tomorrow we will be able to reap the benefits of higher customer engagement and increased employee productivity that these technologies are already demonstrating elsewhere.

Now is the time for financial institutions to start their transformation journey to XR.

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ABOUT CAPCO

Capco, a Wipro company, is a global technology and management consultancy specializing in driving digital transformation in the financial services industry. With a growing client portfolio comprising of over 100 global organizations, Capco operates at the intersection of business and technology by combining innovative thinking with unrivalled industry knowledge to deliver end-to-end data-driven solutions and fast-track digital initiatives for banking and payments, capital markets, wealth and asset management, insurance, and the energy sector. Capco's cutting-edge ingenuity is brought to life through its Innovation Labs and award-winning Be Yourself At Work culture and diverse talent.

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